ENGINEERING and MINING JOURNAL.

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TABLE FOR THE CONVERSION OF ENGLISH AND METRIC UNITS.

This table is based on the authority of RANKINE, and is correct to the fourth decimal place.

1 Meter = 3·2808 feet.
1 Foot = 0·3047 m.
1 Liter (vol. of 1 kilog. water) = 0·2202 gal.
1 Gallon (vol. of 10 lbs. water) = 4·541 liters.
1 Kilog. per sq. meter = 0·2048 lbs. per sq. ft.
1 Kilog. per sq. mm. = 1422·28 lbs. per sq. in.
1 Lb. per sq. in. = 703·0958 kilogs. per sq. m.
1 Grain = 15·4323 grs.
1 Grain = 0·0648 gram.
1 Kilogrameter = 7·2331 ft.-lbs.
1 Foot-pound = 0·1383 kgm.
1 Atmosphere = 14·7 lbs. per sq. in. = 10·333 kilogs. per sq. meter = 29·922 in. or 760 mm. of mercury = 33·9 ft. or 10⅓ meters water.
1 Kilogram = 2·2046 lbs. av.
1 Pound av. = 0·4536 kilog.
1 Deg. Centigrade = 5-9 deg. F.−32°.
1 Deg. Fahrenheit = 9-5 deg. C. + 32°.
1 Calorie (kilog. water raised 1° C.) = 424 kilogrameters = 3·9683 heat-units.
1 Heat-unit (lb. water raised 1° F.) = 772 ft.-lbs = 0·252 cal.

INCORPORATION OF THE POLYTECHNIC REVIEW IN THE ENGINEERING AND MINING JOURNAL.

IMPROVEMENTS IN THE JOURNAL—ADVANTAGES TO ADVERTISERS.

With our New Year's greeting we introduce Volume *Twenty-seven* of the ENGINEERING AND MINING JOURNAL to its thousands of readers and warm friends.

The coming year is full of encouragement and promise to every business interest in the country, and to none are the indications brighter and more hopeful than to those represented by the ENGINEERING AND MINING JOURNAL. This country has fairly passed the "dead point" in business depression, and is on the upward course toward renewed prosperity, with the certainty of a grand future before it.

It is with pleasure we are able to announce further improvements in the JOURNAL, the past history of which has shown a steady progress, to which we refer as the best promise for the future.

The department of scientific NOTES, which has long been a very popular feature in the ENGINEERING AND MINING JOURNAL, has received such warm approval from our readers that it has been decided to enlarge its scope and interest, and make it a permanent feature of the JOURNAL. With this object it has been decided to incorporate the *Polytechnic Review* with the ENGINEERING AND MINING JOURNAL, and to open a department of PROGRESS IN SCIENCE AND THE ARTS, to which due space will be accorded. This important department will be under the able supervision of Dr. WILLIAM H. WAHL, who has heretofore skillfully and ably conducted the *Polytechnic Review*, and will be made so full and complete that it will afford in condensed, attractive, and popular form every feature of interest in the applications of science to the arts. It will be a popular epitome of scientific news and progress in mechanics—in fact, a weekly *Polytechnic Review*. This department will be opened in our next number.

The rapid growth of interest in gold and silver mining has demanded so much of our space that we have been obliged to encroach temporarily upon that formerly devoted to coal and iron. In order to do this important department full justice, and to gain more space for our popular science department, we shall hereafter issue, once a month, a SUPPLEMENT TO THE ENGINEERING AND MINING JOURNAL devoted exclusively to coal and iron, and in this shall give fully the condition of the markets for those products throughout the country, and much other matter of value. We shall each week, as usual, devote that attention to the coal and iron markets which has long made the JOURNAL the most reliable authority upon these subjects.

This incorporation of the *Polytechnic Review* in the JOURNAL will be no less advantageous to our advertisers than to the general reader; for it offers them, without any additional expense, the benefits of the combined circulation of the ENGINEERING AND MINING JOURNAL and the *Polytechnic Review*.

The ENGINEERING AND MINING JOURNAL, which has long had far the largest and most influential circulation of any technical paper in this country, now receives an important increase in the large subscription list of the *Polytechnic Review*. No increase will, however, be made in the rates of advertising; but business men will not be slow to appreciate the fact that a journal which offers them the advantages of the combined circulation of four important popular papers—the ENGINEERING AND MINING JOURNAL, the *Coal and Iron Record*, of New York, the *Mining Review*, of Denver, Colo., and the *Polytechnic Review*, of Philadelphia and New York—at the cost of one, and which affords them incidentally, and also without any additional charge, an export Miniature Edition with a circulation of 100,000 copies—is, beyond all comparison, the cheapest and most valuable advertising medium in this country. The large extra editions which we shall for some weeks circulate in bringing the new features and advantages of the ENGINEERING AND MINING JOURNAL to the attention of various classes in every part of the world should not be neglected by those desirous of improving their business from the commencement of the year.

REVIEW OF THE COAL TRADE OF 1878.

Our annual reviews of the coal trade for the years 1876 and 1877 trace the course of this great industry through one of the most eventful periods in its history, and indicate with photographic accuracy the causes of the difficulties and trials which of late years have overtaken it, and the effects of the various remedies proposed for its amelioration. No doubt we, in common with all honest and impartial historians, have had to state many unpalatable truths in predicting the disastrous effects of some of the nostrums prescribed by the great doctors of the trade. No one, however, can read those annual reviews and not be struck with the remarkable accuracy with which the history of the trade was drawn and the wonderful confirmation which subsequent events have brought to the forecasts made of its future. We confidently refer to those annual reviews of the coal trade as documents of the highest value to all connected with the management of the trade, and of great importance to every one interested in the development of our greatest mining industry.

The year 1878 was not a prosperous one for the anthracite trade, and it saw several large houses connected with the business succumb to the pressure of the "hard times." None of the great transportation companies, however, were forced into the bankruptcy which has seemed impending over them for some years past.

The free competition for trade, which continued from August, 1876, to the close of 1877, resulted in heavy losses to some of the companies. The Philadelphia and Reading Company, pushing out in many new directions, and exhibiting a wonderful degree of enterprise, greatly extended its markets, and though it sold coal at quite as low prices as any of the other companies, it reported the year's business as much more profitable than the previous one under combination high prices and restricted output. After this statement, it was not expected that the Reading would again enter into an arrangement which its books and balances showed to be so disastrous. But the financial needs of the several companies were used by their bankers, urgent for even temporary relief, to force them into a new combination, which, nominally securing better prices for coal, could at least be used to enhance in the eyes of the public the credit of the companies, and enable the large holders of their "paper" to "unload." Moreover, the result of the free competition was to show that the Reading and Lehigh companies, owing to their more favorable geographical locations, were able to take away the trade from the Lackawanna operators. Hence the anxiety of these latter for an arrangement that would neutralize these natural advantages, and preserve to each a fixed proportion of the trade. The year just passed has not justified the expectations of those who thought unity of purpose in demanding high prices and restricting production all that is necessary to make trade profitable. A combination was formed by the seven companies on the following basis for the division and government of the trade:

COMBINATION OF 1878—QUOTA OF THE COMPANIES.

Articles of Association of the Anthracite Board of Control for the year 1878, *as adopted at the several meetings of the representatives of all interests, held at various times prior to January* 16*th*, 1878, *inclusive:*

First. That a Board of Control be established, composed of one representative of the coal-shipping interest upon each of the following lines:

1. Philadelphia and Reading Railroad.
2. Lehigh Valley Railroad.
3. Central Railroad of New Jersey, including the Lehigh and Wilkes-Barre Coal Co., and Lehigh and Susquehanna Railroad Co., and the Lehigh Coal and Navigation Co.
4. Delaware and Hudson Canal Co.
5. Delaware, Lackawanna, and Western Railroad.
6. Pennsylvania Coal Co.
7. Pennsylvania Railroad Co.

Which board shall meet as often as shall be necessary, and shall elect one person as President, and one person as Secretary and Treasurer. Each representative in said board shall cast a number of votes equal to the percentage which his interest represents in the annual production of coal, so that the full vote of all the members shall be one hundred; and the said board shall appoint an expert accountant to receive the reports of the different interests, and keep proper records of tonnage, payments, and penalties.

Second. That the entire annual production of coal (except as hereinafter excepted) shall be apportioned and allotted, by amicable agreement, among the above seven interests. It being understood that all sizes of coal, including buckwheat and pea coal, shall be included, as well as all coal used by any of the companies or operators, except that used for steam or heating purposes at the mines, and that consumed by the miners and laborers working at the mines, which shall not be included; and it being further understood that all coal shipped to the Pacific Coast of the United States, or to any foreign country, other than the West India Islands or the Dominion of Canada, shall not be included in the allotment, or chargeable as such to the interest shipping it.

Third. That at the beginning of each season the yearly quota of each interest (ascertained by taking its proper proportion of an assumed total production) shall be divided into such monthly quantities as said interest may desire, subject to the general approval of the Board of Control, which quantities shall represent the monthly quotas of each interest, subject, of course, to such modifications as the condition of the market may require, provided that any additions to or deductions from the monthly quotas required by the demands of the market shall be made in the proportions of the yearly quotas of each interest.

Fourth. That each interest shall have the right to sell its quota in any manner or at any price. But it is especially recommended that, with a view of bringing the sales departments of the several interests as nearly as possible into harmonious accord, the sales agents of the different coal companies shall occupy one room, thereby constituting a Coal Exchange.

Fifth. That each interest shall pay weekly to the credit of the Board of Control, into some designated depository, 15 cents for each ton of coal produced, and chargeable to it as a fund, out of which, by proper order of the Board, a penalty of $1.25 shall be payable for every ton shipped in excess of proper monthly quotas, for the benefit of those whose quotas are deficient. Provided, however, that all accumulations of such fund, after payments of penalties incurred, shall be (subject to proper directions of the Board) returned to the party paying at the end of each quarter of the year. And provided, that if the fund of any interest shall at any time be insufficient to meet any penalty incurred, such interest shall forthwith make up the deficiency in cash. And provided, further, that, in lieu of the payment of 15 cents per ton as a penalty fund, any interest may, at its option, furnish such security or securities for payment of penalties, when incurred, as may be satisfactory to the Board of Control.

Sixth. In cases of strikes, lockouts, etc., where, in consequence of the inability or refusal of any interest to produce its proper quota, the tonnage of the remaining interest or interests may be greatly out of its proper proportion, such interest or interests so exceeding shall only be called upon for penalties upon such proportion of their excess as is over and above the amount of the allotted quantities which at the commencement of the season had been assigned to it or them, for the period over which such strike or lockout extends. It being provided, that any interest suffering from a strike, and not having received any penalties for the amount of its deficiency during said strike, may, during any period of the remainder of the then current year, make up the said deficiency of tonnage. And provided further, that where any interest does not exceed its monthly allotment in tons, but is in excess of its proper monthly proportion, due to the fact that another interest or interests has or have not shipped its or their full monthly allotment, thereby reducing the total aggregate monthly shipments, such interest so being in excess may, at its option, have the amount of excess deducted from its next month's quota, and the settlement due to such excess may thereupon be made by deduction from or addition to the next month's quotas, in lieu of the payment of the penalties in cash.

Seventh. That each interest shall be chargeable with the several classes of coal hereinafter described, it being understood that the Lehigh Valley interest shall be responsible for and chargeable with all the coal delivered by the Lehigh Valley Railroad to the Lehigh Coal and Navigation Company for transportation by canal.

THE PHILADELPHIA AND READING RAILROAD INTEREST.

All coal passing over main line and Lebanon Valley Branch. All coal passing over laterals for shipment by Schuylkill Canal. All coal shipped West via Northern Central Railway and Catawissa and Williamsport Branch. All coal shipped West and South from Pine Grove. All coal consumed on laterals. All coal for company's use.

THE LEHIGH VALLEY RAILROAD INTEREST.

All coal originating on Lehigh Valley Railroad and branches. All coal originating on line of Pa. and N. Y. RR. All coal originating on line of Sullivan and Erie RR. All coal from Lack. and Bloom. RR., at Plymouth Bridge and Lack. Junction for outside parties, and not included in L. and B. tonnage.

THE DELAWARE AND HUDSON CANAL INTEREST.

All coal shipped to Honesdale. All coal shipped via Jefferson Branch RR. All coal sold at local points. All coal shipped South.

THE CENTRAL RAILROADS OF NEW JERSEY INTEREST.

All coal originating on line of Lehigh and Susquehanna Railroad and branches, and delivered: To points on line of L. and S. RR., above Mauch Chunk. To points on line of L. and S. RR., below Mauch Chunk. To connecting railroads above Phillipsburg. To Bel. and Del. RR., Central RR. of N. J., Morris and Essex RR., Easton and Amboy RR., at Phillipsburg. To Lehigh Valley RR., at Packerton. To Philadelphia and Reading RR. All coal delivered to L. and B. RR. by Lehigh and Wilkes-Barre Coal Co. at Plymouth. All coal delivered to Pa. and N. Y. RR. at Lack. Junction, by L. and W. Coal Co. All coal for company's use. All coal delivered from L. and S. RR to Morris Canal. All coal delivered to Lehigh and Delaware Division Canals, except that which is delivered to the Lehigh Canal at East Mauch Chunk by the Lehigh Valley RR. All coal delivered to Del. and Raritan Canal. All coal sold at mines.

THE DELAWARE, LACKAWANNA, AND WESTERN RAILROAD INTEREST.

All coal mined and purchased by the company and shipped over this road. All coal shipped to local points on Lackawanna and Bloomsburg Railroad, and hauled by D., L., and W. motive power. All coal shipped over main line for other parties.

THE PENNSYLVANIA COAL COMPANY INTEREST.

All of their own coal: shipped to tide via Erie Railway. Shipped to tide via Delaware and Hudson Canal. Shipped to points on line of Erie Railway. Shipped West via Erie Railway. Shipped West via Pennsylvania and New York RR. Sold at stations on Gravity Road. Used by company's engines.

THE PENNSYLVANIA RAILROAD INTEREST.

All coal mined by Susquehanna Coal Co. All coal mined by Mineral RR. and Mining Co. All coal mined by Lykens Valley RR. Co. All coal mined by Summit Branch RR. Co. All coal shipped over Lackawanna and Bloomsburg RR. Co. for outside parties and hauled by Pennsylvania RR. motive power. All coal shipped over Shamokin Division N. C. Railway, from mines of outside parties on that Division, excluding all coal received from P. and R. and L. V. R. roads, but including all coal to local stations, and for locomotive use from such mines. All coal shipped over the Danville, Hazleton, and Wilkes-Barre RR. from mines on that road, including all taken for locomotive use from those mines, but excluding that received from Lehigh Valley RR. at Tomhickon. All coal transported by North Branch Canal, from mines in Wilkes-Barre region, other than that of Susquehanna Coal Co.

Eighth. That the allotment for the year 1878 shall be as follows:

	Per cent.
Philadelphia and Reading RR	28·625
Lehigh Valley Railroad	19·750
Central Railroad of N. J	12·905
Delaware, Lackawanna, and Western RR	12·750
Pennsylvania RR	7·625
Delaware and Hudson Canal	12·480
Pennsylvania Coal Co.	5·865
Total	100·000

Prices were nominally unrestricted, but they were advanced, on paper at least, during the year, simultaneously, and to a nearly equal amount, by the several companies. The following table shows the nominal or circular quotations during the year; the prices obtained were probably as near those quoted as is usual in the trade.

CIRCULAR PRICES OF WILKES-BARRE COAL AT PORT JOHNSON.

Month.	Lump.	Steamer.	Broken.	Egg.	Stove.	Chestnut.
January, February	3.25	3.25	3.25	3.35	3.75	3.25
March, April, May	3.50	3.50	3.50	3.60	3.90	3.25
June, July, August	3.60	3.60	3.60	3.75	4.20	3.60
September, October	3.60	3.60	3.70	3.85	4.20	3.60
November	3.60—3.35	3.60—3.35	3.70—3.40	3.85—3.45	4.20—3.90	3.60—3.30
December	3.35	3.35	3.40	3.45	3.90	3.30

SCRANTON AND LACKAWANNA COALS AT HOBOKEN.

Month.	Lump.	Steamer.	Broken.	Egg.	Stove.	Chestnut.
January, February, March	3.25	3.25	3.25	3.35	3.75	3.50
April, May	3.50	3.50	3.50	3.60	3.90	3.50
June, July	3.60	3.60	3.60	3.75	4.20	3.60
August, September, October, November, December	3.60	3.60	3.65	3.80	4.20	3.65

PITTSTON AT NEWBURG.*

Month.	Lump.	Steamer.	Broken.	Egg.	Stove.	Chestnut.
January, February	3.25	3.25	3.25	3.35	3.75	3.50
March, April, May	3.35	3.35	3.35	3.45	3.75	3.10
June	3.45	3.45	3.45	3.60	4.05—3.95	3.40—3.50
July	3.45	3.45	3.45	3.60	4.05	3.50
August	3.55—3.45	3.55—3.45	3.45—3.65	3.75	4.05	3.50
September, October	3.55	3.55	3.65	3.75	4.05	3.50
November	3.55	3.60—3.55	3.65—3.30	3.75—3.30	4.05—3.85	3.50—3.40
December	.....	3.30	3.30	3.30	3.85	3.40

* January and February, at Weehawken.

From this it appears prices were advanced on an average about 90c. per ton over those obtained in 1877; and if the public could have been obliged to buy the coal in large quantity at the prices ordered, no doubt the combination would have been a success. A variety of natural causes, however, interfered with the realization of the hopes of the combination advocates.

The winter of 1877–8 was an exceedingly mild one, and the strictest economy in expenditures ruled, so that the consumption for domestic purposes was probably several million tons less than usual, and the pressure of hard times was still felt in every department of manufacturing business. The low prices of 1877 had induced large consumers to lay in heavy stocks, so that, even had the prices of 1877 prevailed during 1878, it is doubtful if the market would have taken the same amount of coal. As it was, the increase in the price resulting from the combination certainly restricted consumption, and the uncertainty as to what this would be advanced to forbade manufacturers making contracts for their wares on the small margins obtainable. Moreover, the public generally had little faith in the combination, and pursued a hand-to-mouth policy, buying only to supply immediate necessities.

The great decline in the prices of nearly every article of trade continued during the entire year, and apparently will do so during the early part at least of the present year. Manufacturers desirous of securing economy by increasing production have made vigorous, and in the main successful, efforts to secure a foreign market for their surplus goods. Our

exports have enormously increased, and it seems as if we had now fairly entered upon this important phase of our commercial history. It has been apparent, at least since 1873, and has been repeated again and again in the pages of the ENGINEERING AND MINING JOURNAL, that the productive capacity of the country exceeding the home requirements of our people, a foreign market has become an absolute condition to the growth of our manufacturing industries. But a foreign market can only be obtained by competing in prices with the products of other countries; hence the future normal condition of our markets will be largely regulated by the cost of production in foreign countries, and will be wholly independent, in many important articles, of tariff or import duties. The effect of this new condition of affairs will be permanent upon the coal trade. There can be no high prices for anthracite coal for years to come, and any attempt to impose them through combinations will simply either drive consumers to soft coal, or will cripple the growth of the industries that in the future should become among the chief markets for anthracite. It is not a question of our desires or our hopes; for we would be pleased beyond measure to see our coal companies enjoying a full trade at remunerative prices; but it is a question of laying the foundations of prosperity in the trade by encouraging the development of industries which will make a large market for coal; and this can never be accomplished by any system of combination, the primary object of which is always the exaction of prices higher than those the natural condition of the market affords. This method of "regulating" the business and of temporarily relieving embarrassed producers has been tried again and again in the history of the coal trade, and always with the same ultimate result—a temporary advantage to some at the expense of others, and a permanent injury to the trade. There has been nothing in the "environment" of our anthracite trade at any time to justify the expectation that the same causes would not produce results similar to those which have marked the course of every such experiment in the past.

A great number of plans for "the regulation of the trade," that is, for keeping up prices, have been proposed. The earlier of these combinations were in the form of agreements among the operators of certain districts to maintain prices up to given standards decided upon at periodical meetings. These agreements were never lived up to, and they always resulted in ill-feeling, which made the subsequent competition still sharper and the prices still lower than they were at the beginning.

It was then sought to limit production only, till the scarcity of coal in the market would enable its holders to secure satisfactory prices. This plan was inaugurated by the Miners' Union, with the object of maintaining wages, which the Union sought, fairly enough, to base upon the selling price of coal. The *modus operandi* was for the Union to order a suspension of work at all the collieries from time to time, as it appeared the market was overstocked with coal and prices and wages were in danger of a break.

This plan had obvious disadvantages. It gave occasion to, if it did not actually encourage, a spirit of lawlessness and violence toward the non-Union men who were willing to work on steadily even at lower rates of wages; for it was essential that the stoppage should be practically universal, or it would be without effect. The possession of the ability to regulate prices and wages naturally led the Union to excesses, and induced its leaders to seek not only higher wages but shorter hours of work. In fact, it sought—as its successor, the combination, has since done—to charge upon the coal trade the support in semi-idleness of twice as many men as were needed for the work involved. Moreover, the organization and power which success developed in the Miners' Union made this a dangerous and, to the employers, an exceedingly undesirable element in the trade. It consequently brought the great transporting companies together in an understanding for mutual protection, which resulted in the destruction of the power of the Union as the outcome of a prolonged strike.

Having overcome the Union, the companies sought to carry out the same plan themselves, and, by agreement among the half-dozen transporters, endeavored to regulate the selling price of coal, and, that not proving efficient, to limit the amount of coal brought to market to the requirements of the trade at the prices it was assumed the producers were entitled to charge. Instead of strikes or suspensions ordered by the Union, we had lockouts or suspensions ordered by the transporting companies. It became, of course, necessary to regulate the proportion of the whole which each company was allowed to send to market, and it was deemed desirable to limit also the prices below which no coal was to be sold. Programmes or agreements were made between the companies to secure these ends; but as the usual source of revenue from loans became unavailable and as the decreasing coal business consequent upon the high prices established by the combination made their earnings less and less, the financial needs of the companies became more and more pressing, and it was found impossible to secure good faith in the execution of the programmes agreed to. The combinations which lasted from 1873 to 1876, after fruitlessly trying various means to secure good faith in the execution of the plans agreed upon, broke up, as already stated, in August, 1876.

Though the compact of 1878 was as fairly carried out by the high contracting parties as such agreements might be expected to be, the results were altogether unsatisfactory for several of the companies, and led, toward the close of the year, to its practical abandonment, so far as concerned any effort to regulate prices, as may be seen by reference to the tables giving both circular and auction sale prices.

The effect of combination does not bear evenly on the several interests. If we assume the business actually done by each under free competition as the standard of measurement of their claims to the trade, an examination of the following table of monthly tonnage of the several companies during the six years past will show that, under combination, the Lackawanna companies gain at the expense of the Schuylkill and Lehigh. This fact is very prominently shown in a comparison of the business of the several companies during 1877 (without combination) and 1878 (with combination):

MONTHLY TONNAGE OF EACH INTEREST AND TOTAL ANNUAL TONNAGE FOR SIX YEARS, 1873 TO 1878, INCLUSIVE.*

1873.

	Jan.	Feb.	March.	April.	May.	June.
Philadelphia and Reading RR.	213,293	237,369	447,000	562,239	537,944	558,650
Lehigh Valley RR	252,274	277,232	318,184	355,273	415,635	410,595
Central RR. of New Jersey..	191,446	169,316	209,299	275,580	265,118	215,948
Dela., Lacka. and Western RR.	195,000	224,345	283,457	297,561	286,022	285,003
Dela. and Hudson Canal Co...	96,811	89,232	128,590	199,983	343,843	310,064
Pennsylvania RR.....	68,114	61,075	99,897	91,946	129,064	154,763
Pennsylvania Coal Company.	49,570	54,612	72,186	105,494	133,151	156,702
	1,066,008	1,113,181	1,557,613	1,188,076	2,110,777	2,091,725

	July.	August.	Sept.	Oct.	Nov.	Dec.	Total.
Ph. and Read. RR.	545,440	600,058	638,481	603,375	556,357	368,642	5,868,848
Lehigh Valley RR.	388,430	428,064	445,365	375,356	210,299	193,862	4,170,569
Central RR. of N. J.	235,982	264,717	241,265	301,328	199,971	128,149	2,698,119
Delaware, Lackawanna & W. RR.	236,248	255,561	244,444	243,583	202,791	201,758	2,955,773
Delaware and Hudson Canal Co....	298,734	328,275	339,865	309,491	210,773	96,935	2,752,596
Pennsylvania RR..	179,928	172,162	179,191	168,765	127,105	88,701	1,519,711
Penn. Coal Co.....	130,103	121,972	134,611	130,231	102,151	107,321	1,297,604
	2,014,865	2,170,859	2,223,222	2,132,129	1,709,447	1,185,368	21,263,220

1874.

	Jan.	Feb.	March.	April.	May.	June.
Philadelphia and Reading RR.	144,780	205,217	418,157	561,645	596,489	545,293
Lehigh Valley RR.....	308,917	231,214	310,551	367,084	397,580	381,367
Central RR. of New Jersey..	83,700	111,743	207,009	248,696	272,395	262,176
Dela., Lacka. and Western RR.	174,572	162,734	192,614	235,953	266,164	236,284
Dela. and Hudson Canal Co...	67,480	88,224	108,088	204,426	317,314	266,096
Pennsylvania RR.....	87,943	89,834	96,537	132,291	166,171	167,490
Pennsylvania Coal Company.	91,046	84,396	85,333	114,448	131,820	123,258
	958,438	973,362	1,418,289	1,864,543	2,147,933	1,981,954

	July.	August.	Sept.	Oct.	Nov.	Dec.	Total.
Ph. and Read. RR.	297,333	378,567	620,480	812,831	636,409	351,400	5,568,601
Lehigh Valley RR.	321,665	316,012	324,242	428,244	360,250	322,675	4,069,801
Central RR. of N. J.	131,265	245,128	307,889	331,443	257,521	247,042	2,706,007
Delaware, Lackawanna & W. RR.	152,925	164,563	164,563	251,121	186,440	208,064	2,395,987
Delaware and Hudson Canal Co....	246,585	242,651	269,748	267,343	235,732	85,730	2,399,417
Pennsylvania RR..	162,874	156,297	170,270	190,696	134,237	87,834	1,642,474
Penn. Coal Co.....	131,735	133,993	135,225	133,056	115,499	116,517	1,396,326
	1,444,382	1,637,211	1,992,417	2,414,734	1,926,088	1,419,262	20,178,613

1875.

	Jan.	Feb.	March.	April.	May.	June.	July.
P. and R. RR.....	49,877	71,307	103,733	103,066	149,924	311,146	746,175
L. V. RR.....	99,135	119,906	88,151	117,756	114,722	105,839	399,091
C. RR. of N. J.....	30,445	43,116	72,447	46,870	76,369	110,892	335,530
D., L., and W. RR.....	133,997	155,584	230,698	314,918	345,897	319,516	284,079
D. and H. C. Co.....	101,082	126,302	145,182	236,812	475,398	448,113	349,535
Pennsylvania RR..... ...	60,289	86,891	121,983	114,693	125,272	154,472	205,456
Pennsylvania Coal Co...	100,547	88,433	69,626	123,248	131,410	145,585	131,988
	575,372	691,539	831,820	1,057,363	1,418,912	1,595,563	2,451,854

	August.	Sept.	Oct.	Nov.	Dec.	Total.
Philadel. and Reading RR...	741,271	749,610	769,527	663,098	323,577	4,782,311
Lehigh Valley RR.....	482,229	506,438	509,622	459,007	351,738	3,353,634
Central RR. of New Jersey..	349,843	357,315	377,351	332,125	333,499	2,465,903
Del., Lack., and West. RR..	254,210	230,362	185,671	230,994	184,865	2,870,711
Del. and Hudson Canal Co..	298,076	277,877	211,155	254,264	130,021	3,053,817
Pennsylvania RR.....	207,783	193,118	199,688	186,612	116,462	1,772,719
Pennsylvania Coal Co.....	136,107	125,333	143,673	119,109	111,318	1,426,377
	2,469,519	2,440,053	2,396,687	2,245,209	1,551,480	19,735,471

* This table does not give the entire *production* of anthracite. Certain amounts consumed for steam generation at the mines, and coal sold to the employés, and that mined and used by the Lackawanna Coal and Iron Company, and some other items, amounting, perhaps, in all to 6 per cent, are not here taken into account.

1876.

	Jan.	Feb.	March.	April.	May.	June.	July.
P. and R. RR.	152,104	107,491	157,523	550,255	565,406	328,895	330,791
L. V. RR.	277,613	112,415	203,794	407,791	283,339	342,125	337,971
C. RR. of N. J.	200,168	53,855	74,263	274,222	313,328	166,900	178,105
Del., L., and W. RR.	145,321	22,732	50,789	135,105	99,943	106,565	126,730
Del. and Hud. C. Co.	94,118	52,822	95,620	117,282	214,257	166,842	158,447
Pennsylvania RR.	73,989	60,430	86,769	143,567	164,038	155,284	147,162
Pennsylvania Coal Co.	109,002	71,467	34,897	69,330	85,082	98,722	81,268
	1,052,315	484,212	703,655	1,697,552	1,725,393	1,365,333	1,360,474

	August.	Sept.	Oct.	Nov.	Dec.	Total.
P. and R. RR.	406,053	556,818	730,153	676,465	369,800	4,931,754
L. V. RR.	377,343	382,825	491,941	469,211	360,292	4,046,660
C. RR. of N. J.	293,538	306,930	320,878	313,016	275,893	2,778,096
Del., L., and W. RR.	198,548	249,044	286,127	331,235	232,106	2,014,245
Del. and Hud. C. Co.	147,367	244,035	298,845	305,979	101,931	1,997,545
Pennsylvania RR.	145,137	172,963	199,035	173,573	101,388	1,623,335
Pennsylvania Coal Co.	103,763	123,561	142,867	135,038	88,925	1,143,922
	1,671,749	2,036,173	2,469,846	2,434,517	1,530,335	18,535,557

1877.

	Jan.	Feb.	March.	April.	May.	June.	July.
P. and R. RR.	298,297	271,501	376,506	599,261	712,501	611,984	545,545
L. V. RR.	243,148	299,503	280,716	392,553	462,902	386,139	336,719
C. RR. of N. J.	141,716	168,771	243,657	312,819	317,762	279,720	201,819
D., L., and W. RR.	159,325	151,951	159,753	160,000	278,000	262,968	217,325
D. and H. C. Co.	115,687	81,832	100,351	162,217	271,543	251,071	224,662
Penn'a RR.	88,855	89,090	76,445	144,948	181,598	176,780	132,570
Penn'a Coal Co.	66,689	55,392	89,606	89,532	103,573	159,257	104,857
	1,113,717	1,118,040	1,327,034	1,861,330	2,327,879	2,127,919	1,763,497

	August.	Sept.	Oct.	Nov.	Dec.	Total.
Phil'a and Read'g RR.	730,349	767,878	745,686	605,546	577,051	6,842,105
Lehigh Valley RR.	306,643	453,394	521,571	418,773	409,270	4,511,331
C. RR. of N. J.	46,469	131,331	320,399	333,996	339,041	2,837,500
Del., L., and W. RR.	12,090	8,041	213,280	318,059	148,734	2,089,523
Del. and Hud. C. Co.	138,967	62,152	96,610	206,785	206,740	1,918,617
Pennsylvania RR.	94,581	117,390	154,952	153,810	119,575	1,530,594
Pennsylvania Coal Co.	62,267	19,922	107,221	127,952	131,743	1,118,011
	1,391,366	1,560,108	2,159,719	2,164,921	1,932,151	20,847,681

1878.

	January.	February.	March.	April.	May.	June.
Philadelphia and Reading RR.	$180,980.07	$126,207.12	$190,679.04	$372,667.11	$474,450.17	$691,746.07
Lehigh Vall'y RR.	306,012.19	147,197.14	190,786.00	234,344.16	260,633.01	341,565.11
Central RR. of New Jersey.	108,706.15	129,116.01	121,060.14	150,323.04	197,889.19	187,395.19
Del., Lack., and West. RR.	193,978.02	143,223.10	99,842.00	100,774.11	161,574.08	190,429.13
Del. and Hudson Canal.	233,589.06	199,480.01	99,618.08	100,127.05	128,433.17	107,701.01
Pennsylv'a RR.	91,517.01	50,024.14	59,469.05	102,604.16	121,143.04	138,853.06
Pennsylv'a Coal Co.	64,136.14	49,824.06	45,184.03	69,865.08	84,290.02	102,586.00
	$1,178,921.04	$845,073.18	$806,639.14	$1,130,707.11	$1,428,415.08	$1,760,278.00

	July.	August.	September.	October.	November.	December.*
Philadelphia and Reading RR.	$398,500.19	$650,402.01	$302,318.00	$533,391.14	$739,260.13	$204,402.19
Lehigh Vall'y RR.	330,441.17	373,988.15	209,046.10	325,882.06	367,817.13	212,894.06
Central RR. of New Jersey.	239,751.07	235,765.01	143,278.01	235,089.02	260,418.00	158,423.09
Del., Lack., and West. RR.	211,467.18	229,419.16	167,677.13	197,050.01	247,732.05	145,775.16
Del. and Hudson Canal.	191,654.03	213,694.09	155,104.18	181,749.13	214,036.05	143,333.07
Pennsylv'a RR.	124,558.19	120,607.04	123,291.00	135,523.19	165,173.12	73,648.10
Pennsylv'a Coal Co.	85,029.05	117,521.08	67,359.10	92,010.06	120,511.19	38,256.01
	$1,581,404.08	$1,941,398.17	$1,168,075.12	$1,700,697.01	$2,114,949.18	$976,735.08

* Up to December 21st.

This last effort at regulating the trade seems now to be abandoned, and of all the plans proposed but two yet remain untried. One suggests limiting the production by allowing the mines of each region to work simultaneously a certain number of days each month, and all to stand idle the remaining days, without any limit on the amount to be produced in the time allowed for work. The other plan proposed calls for pooling all the coal and selling it from one general office.

Neither of these plans offers any permanent advantage over those already tried, and both have obvious drawbacks which have frequently been pointed out in the columns of the ENGINEERING AND MINING JOURNAL, and which seem to make their acceptance impossible. There seems, in fact, nothing left but for each interest to take care of itself and seek the largest market its advantages can secure, even if such a course should embarrass some of the least advantageously situated fields.

The amount of capital invested in the coal lands and railroads held by the large companies is so enormous that nothing but an immense increase in the market for coal can enable them to earn dividends from the low prices which every thing points to as the normal standard of the market for years to come. No forced high price, and its necessarily accompanying high cost of production, can secure that necessary expansion of the market. But perhaps the most that was expected of combination was by forcing larger immediate returns, even at the expense of the future well-being of the trade, to tide those interested over to such times as the general revival of business and a better financial feeling would enable them to recommence the system of loans and debt-expansion which, account for most of the large dividends declared in years gone by.

We have had an unpleasant duty to perform in recording the disastrous course of the coal trade during the past four years; but we turn with greater hopefulness and satisfaction to the future. Not that we consider the trials of the coal companies at an end, nor that we anticipate in the year 1879 any very profitable trade, but there are many indications full of encouragement for the near future of this great industry, though there are also dangers still to be pointed out.

The greatly improved business outlook, the reviving confidence of business men and capitalists, the rapidly increasing consumption of iron and steel, and the immense activity and productiveness of our gold and silver mines, as well as many other facts, point to a much better feeling in the coal trade during the current year, and lead us to anticipate a production of anthracite approaching twenty-one million tons during the year.

Were it not for the threatening condition of business depression in Europe, and particularly in England, it would be safe to predict for the coming year a great improvement on this side of the Atlantic in business of every description. As it is, the actual and impending distress in England will affect us here very seriously. It means that wages and every other item of cost in manufacture are going still lower in Europe; that to find a foreign market in competition with England, our own cost of production will have to be a minimum, and even then our foreign outlet will be restricted in many directions with a resulting over-supply in our home market. It is a death-struggle for England to hold her supremacy; and, with starving operatives and abundant capital, a cheapness in production never before attained may be looked for. Our own increase in exports and decline in imports make freights to this country so low that they are merely nominal in many cases; iron, coal, salt, and similar articles being carried here as ballast. The great fact that the United States has become and must continue to be, a great exporter, that our foreign business must continue to increase, and that we must learn, if we do not already know how to manufacture cheaper than those countries dependent upon us for their raw materials and for the provisions upon which their operatives live, are elements which can not be overlooked in estimating the future of any department of our trade, and all the present indications are such as absolutely to preclude the assumption that any thing but very low prices for coal can rule for some time to come. This is no question of mere sentiment nor of our desires, but one of facts that are mostly beyond our control, and that no combination can cure, but would rather aggravate.

Nevertheless, we have a firm and, we believe, a well-founded conviction that the future of this country will find us one of the great workshops of the world, and will make this the richest and most prosperous nation the world has ever seen. The cost of living, which has already greatly declined during the past few years, will still continue to do so, till our laboring classes can subsist cheaper here—as it seems natural they should do—than those living in distant countries on the breadstuffs we send them. The starving, idle population of foreign countries will flow in upon us, and no doubt the coming year will see an enormous increase in immigration. Wages, which are seldom much above the actual, bare cost of living, though they may not still further decline, will probably not increase, except in special cases, where there may be a temporarily insufficient supply of skilled labor. The unbounded agricultural and mineral riches of our great West offer the most inviting field in the world for the laboring classes to seek homes in, and while its rapidly increasing production of grain and cattle will reduce the cost of living, the magnificent yield of our gold and silver mines will flood the country with wealth, which will create new wants and new markets. Western industries will naturally first feel the revival—indeed, they are already feeling it—while the East will suffer under the competition of the Western manufacturers for the markets we must reach by paying heavier transportation charges than they do, and the competition of distressed Europe in foreign markets. Low cost of manufacture seems, therefore, a permanent condition in the East, and with it will necessarily come low cost of coal.

OUR ABILITY TO PRODUCE CHEAP COAL.

No part of the world possesses coal of finer quality, or deposits from which it can be produced more economically. The magnificent anthracite beds of Pennsylvania are unequaled in any other part of the world. They are easily reached, at very moderate depth, and are such that a

miner can and does produce from two to four times as much coal per day's labor as in the soft coal beds of any part of Great Britain. The actual cost of coal on the railroad cars at the mines in the north of England is to-day, with the largest output ever reached, probably $1.10 per ton. The following figures give that cost in detail, as it was early in 1878. Reductions in wages have since been made.

	Durham.	Northumberland.
Hewing	$0.36	$0.52
Other underground labor	30	32
Outside labor	17½	17
Royalty	11½	12
Materials, horses, horse-keep, machinery, etc	24	22
Taxes and office charges	04	05
	$1.23	$1.40

In 1877, with full output, the cost of anthracite on the cars at the mines, including, of course, the expensive operation of "breaking," was to the Reading Company $1 per ton, exclusive of royalty. Under the combination rule of the past year, this cost was probably increased 30 per cent. The following table gives this cost for a series of years, and shows the effect of large production in reducing cost :

TONNAGE, EXPENSES, AND AVERAGE COST PER TON FOR COAL AT COLLIERIES WORKED BY THE PHILADELPHIA AND READING COAL AND IRON COMPANY FOR THE YEARS 1873, 1874, 1875, 1876, 1877, and 1878. TONS, 2240 POUNDS.

MONTHS.	For year 1873.			For year 1874.		
	Tons.	Expenses.	Cost per ton.	Tons.	Expenses.	Cost per ton.
December	92,524 03	$249,352 40	$2 71·3	80,212 05	$217,527 71	$2 71·2
January	11,353 11	82,202 45	7 31	10,915 04	91,066 26	8 34·3
February	29,388 03	151,482 00	5 15·4	50,816 07	176,780 49	3 47·9
March	92,689 01	257,187 54	2 77·4	110,748 12	312,285 86	2 81·9
April	128,505 18	325,924 74	2 53·6	129,323 10	309,952 99	2 39·6
May	123,492 10	316,948 91	2 57	142,777 00	321,971 28	2 25
June	127,206 09	318,772 52	2 50·5	145,759 15	319,998 19	2 12·6
July	126,793 12	312,720 94	2 46·6	64,415 19	211,997 15	3 29
August	140,481 18	328,826 46	2 34	88,309 17	236,610 80	2 67·9
September	160,957 06	349,221 18	2 17.6	158,228 05	352,044 78	2 21·9
October	167,249 03	362,041 23	2 16·3	226,267 16	450,200 70	1 98·9
November	148,196 14	330,469 31	2 23	167,016 06	364,472 16	2 18·2
Total	1,348,838 08	$3,385,149 68	$2 51	1,374,790 16	$3,364,908 37	$2 44·8

MONTHS.	For year 1875.			For 11 months, 1876.		
	Tons.	Expenses.	Cost per ton.	Tons.	Expenses.	Cost per ton.
December	82,893 15	$155,419 39	$1 87·4	.....	.....	.....
January	5,907 14	41,840 96	7 08·2	42,274 19	$132,015 09	$3 12·2
February	5,411 09	50,347 84	9 30·4	26,882 10	133,765 29	4 97·6
March	6,413 17	67,937 75	10 59·2	49,097 08	183,750 29	3 74·4
April	5,790 09	72,597 08	12 53·8	208,686 07	309,703 93	1 48.4
May	9,256 09	83,596 61	9 03·1	206,103 00	276,358 30	1 34
June	92,974 13	215,645 03	2 31·9	117,746 16	173,274 47	1 47·1
July	260,312 04	424,431 33	1 63	122,469 01	169,276 49	1 38·2
August	256,546 12	441,424 95	1 72	177,767 02	229,404 88	1 29
September	266,150 19	452,129 57	1 59·7	264,637 19	270,664 27	1 02·3
October	290,019 06	447,989 68	1 54·4	316,974 14	316,696 11	99·9
November	228,895 04	368,249 32	1 60·8	320,724 05	314,574 12	98
Total	1,510,572 11	$2,821,609 51	$1 86·7	1,853,364 01	$2,509,483 24	$1 35·4

MONTHS.	For year 1877.			For year 1878.		
	Tons.	Expenses.	Cost per ton.	Tons.	Expenses.	Cost per ton.
December	198,411 14	$219,449 94	$1 10·6			
January	146,082 05	198,733 45	1 36			
February	133,114 00	229,705 34	1 72·6			
March	205,713 04	310,245 07	1 50·8			
April	324,382 06	353,458 40	1 08·9			
May	380,714 12	386,974 63	1 01·7			
June	375,710 10	349,610 54	93	(Figures not yet obtainable.)		
July	376,249 12	335,370 90	89·1			
August	420,398 09	418,497 56	99·5			
September	419,602 06	404,810 39	96·5			
October	441,902 05	419,780 08	95			
November	372,247 13	315,925 41	84·9			
Total	3,794,528 16	$3,942,561 71	$1 03·9			

The minimum of cost has not yet been reached in Pennsylvania. Improved systems of mining must be devised by which the greater part of the sixty or sixty-five per cent of all our coal, now wasted in pillars in the mines and in the preparation of the coal for market, may be saved. In this way, the royalties may be reduced, for the yield per acre will be increased, and the charge per ton for improvements will be greatly lessened, for a single expensive shaft will mine twice as much coal as it now does.

With unrestricted markets and the exercise of economy, the cost of producing anthracite will reach a minimum never yet attained, while the market demand for this coal, resulting from its admirable qualities and this low cost, will vastly exceed any thing in our past experience, and before very many years equal the maximum producing capacity of our restricted anthracite fields,

It is to this possible prodigious increase in the use of low-priced anthracite for industrial purposes that the present owners of these fields must look for remuneration upon their enormous (and excessive) investments. No policy, based upon the supposition that the public will look upon anthracite coal as a "luxury" and will be willing to pay a "fancy" price for it, can ever secure that development of the trade which at any obtainable price could make the present investments remunerative. And the adoption of any such policy would work a national injury beyond all computation in amount.

AREA AND CONTENTS OF OUR ANTHRACITE FIELDS.

The quantity of coal in our Pennsylvania anthracite basins has been vastly overestimated ; in fact, it does not amount to one third the quantity usually accredited to them.

From a thorough investigation of the subject, and by the aid of a great number of measurements and actual working results in the various fields, which, with illustrative sections in the several fields and of all the beds and much other interesting matter upon the history of the anthracite trade and of anthracite mining, will be published in the current volume of the ENGINEERING AND MINING JOURNAL, we have compiled the following table :

THE AREA AND CONTENTS IN COAL OF THE ANTHRACITE BASINS OF PENNSYLVANIA.
By Richard P. Rothwell.

FIELD.	AREA.		Av. thick. coal, ft.	QUANTITY OF COAL.		p. c.
	Square miles.	Acres.		Per acre. Tons.	Total quantity. Tons.	
Wyoming	185	118,500	19	34,580	4,097,730,000	36
Lehigh	43¾	28,000	20¼	36,855	1,030,120,000	9
Schuylkill	215	137,500	25	45,500	6,256,250,000	55
Total	373¾	284,000	22	40,084	11,384,100,000	100

FIELD.	Amount marketed to end of 1877. Tons.	Amount exhausted, including waste. Tons.	Amount yet remaining. Tons.	p. c.	Amount yet obtainable, allowing for waste. Tons.	p. c
Wyoming	151,475,872	60 p.c. waste. 378,689,680	3,719,040,320	36	50 p. c. waste. 1,859,520,160	41
Lehigh	72,422,227	65 p.c.waste. 206,910,302	823,209,698	08	60 p. c. waste. 329,283,879·2	07
Schuylkill	157,776,236	65 p.c. waste. 450,766,703	5,805,483,297	56	60 p. c. waste. 2,322,193,318·8	52
Total	381,674,335	1,036,366,685	10,347,733,315	100	4,510,997,358	100

Space forbids our entering here upon the question of the proportion of the whole owned or controlled by each of the great companies, and many other interesting matters ; but we call attention to the enormous waste which our present system of mining involves, and to the comparatively small total amount of anthracite we possess ; and we urge, as we have already done so many times, in season and out of season, the necessity for the adoption of a better system of mining. The perpetuation of any system which occasions the total and irretrievable loss of from 50 to 70 per cent of all the coal in the bed, is a standing disgrace and a disastrous blunder for those interested.

MEASURES FOR THE BETTERMENT OF THE LABORING CLASSES.

We again revert to this as probably the most important question connected with the coal trade. The well-being of the workman depends not so much upon the amount of his daily wage as upon the amount of the necessaries and comforts of life which he can obtain for a day's labor. It is therefore of the utmost importance to employers that their workmen should be able to procure the necessaries of life at the lowest possible cost, and that they should know how to utilize these supplies to the greatest advantage.

No trades-union ever agitated a reform so urgently needed or struck for an advance or against a reduction in wages half so important to the laboring classes as are the tame domestic questions of what are the articles of diet best suited to the conditions and means of different classes of workmen? how can they procure these things at the minimum of cost? and how can they cook or utilize them with the greatest advantage and with the least waste? Every one at all familiar with the expenditures and mode of living of the laboring classes must be struck with how little, whether of material things or of comfort, they get for their money ; and we believe it quite within the possibilities that with proper instruction upon the questions of what to buy, how to buy it, and how to use it, there would be greater comfort and a saving of quite one half of the present expenditures of our wage laboring classes. The establishment of schools where the wives and daughters of our working men (and others) would be instructed by competent teachers in the qualities of different foods, and in the various arts which go to make up "housekeeping," and which conduce equally to economy and comfort ; the encouragement of the establishment of coöperative stores, or some system by which the poorest workman may get the benefit of wholesale prices, suggest themselves as efficient and much-needed measures for the betterment of our

working classes, and are of quite as great importance to employers; for they have in the end to pay for the waste this want of knowledge occasions.

ARBITRATION.

Arbitration is becoming less popular; it always does and will become so whenever either one side or the other possesses the power to enforce, arbitrarily, its views. The principle, however, is that of justice and honesty, and it will come up again and again until it is finally adopted as a means of settling the disputes which will inevitably occur from time to time between employers and employed. It is true the workingmen are down now, and are too poor to make any prolonged strike even if the condition of business justified—which it does not—an advance in the rates of wages; but for that very reason this seems to be a most opportune time for the establishment of boards of arbitration to which the disputes which will by and by arise may be submitted for settlement.

If the coal trade be unfettered by any combination during the current year, the production of anthracite will probably attain about twenty-one million tons, an output which would tax the labor supply at present in the anthracite fields. A scarcity of labor would involve demands for higher wages, and strikes, if there be no amicable method of settling the question. In the interests, therefore, of both employers and workmen, this question calls for earnest consideration.

The intention of the Philadelphia and Reading Company to push its business to its utmost ability is already apparent in the liberal tolls which it has offered the operators on its lines for the coming year. These tolls are 40 per cent of the price of coal at the shipping ports for the toll from the mines to Port Richmond, and 50 per cent to Amboy. Under this arrangement we may look for the largest output from the Schuylkill region that has ever been recorded.

GENERAL INCIDENTS IN THE COAL TRADE.

Early in the year, Mr. E. A. QUINTARD, general sales agent of the Philadelphia and Reading Company, was appointed general foreign agent for that company, and visited nearly every part of Europe in that capacity. This effort of the Reading Company to extend its foreign trade has been partially successful, and it is estimated that a profitable European market can be found for probably 150,000 tons of our anthracite yearly, chiefly to take the place of coke in foundries.

Mr. QUINTARD represented the Reading Company at the Paris Exposition, where its fine exhibit of anthracite coal and coal stoves, and an anthracite-burning locomotive, built at its Reading (Pa.) shops, were greatly admired.

An effort was made at the commencement of the year to establish a Coal Exchange, where sales agents and others could compare notes, discuss the trade, and make contracts for coal. The plan seemed to offer many substantial advantages, but it apparently developed some opposition, for it was not put in execution.

There were a number of failures in the coal trade during the year past. There were ten in the city of New York alone, with liabilities amounting to $581,752, and nominal assets of $303,723. In Boston and in other cities, the trade also lost several important houses. In the majority of cases, the losses were connected with transactions of a fraudulent character, and were in some instances very disastrous.

One of the most notable effects of the combination effort to force prices was the adoption of coke in the place of anthracite at many blast-furnaces which had never before used it. Thus the Port Henry Furnace is to-day using one third Connellsville coke to two thirds "Cross Creek" and other Lehigh anthracite. Crown Point, Hudson, and other furnaces are also using a large proportion of coke in their charges.

The Lehigh furnaces report that the increased price demanded for anthracite was equal to from 50c to $1 per ton on the iron produced—a figure probably greater than the net "profit" at the most successful furnace in that district.

Blossburg coal came further East than usual under the influence of the same cause, while Cumberland coal took probably 250,000 tons of the anthracite market in the Eastern States.

THE COURSE OF TRADE.

The year opened with comparatively small stocks of coal in first hands; but to counteract this, dealers and consumers had much larger stocks than usual, the result of purchasing during the low prices of 1877. In January, the coal combination was formed and prices began to advance, which, with the exceedingly mild weather at that time, and in fact during the whole winter, made the demand quite small. By the announcement of advanced price lists, and advances to be made, sundry spurts were given to business during the first six months of the year, but, as a large amount of coal existed "on the market," during this time, with no indications of its decreasing, and as prices were being cut on this account, there was a feeling among buyers that the combination could not be maintained through the season, especially as the Board of Control continued to force an excessive production on the market from month to month. The stocks in the hands of the companies were but little less on July 1st than on January 1st. After July 1st, the feeling prevailed that the combination would last through the year, and those who desired coal purchased with a greater feeling of safety. It was not, however, until October that much business was observable, and even then the weather was so mild as to greatly limit the demand. After October, it began to be apparent that the chances of forming a combination for 1879, or of extending the existing arrangement beyond the end of the year, were but slight, and business again fell off; and, owing to the large production allotted, prices declined at the close of the season.

THE ANTHRACITE COAL PRODUCTION OF PENNSYLVANIA, IN TONS OF 2240 POUNDS.

(The Wyoming Region; The Lehigh Region; The Schuylkill Region.)

YEARS.	[illegible] Region. Luzerne and Sullivan Counties.		The Lehigh Region. Carbon, Columbia, and Luzerne Counties.		The Schuylkill Region. Schuylkill, Northumberland, Columbia, Dauphin, and Lebanon Counties.		All the Regions.
	Shipments.	Total Production.	Shipments	Total Production.	Shipments.	Total Production.	Total Production.
Before 1820	.....	10,000	.....	3,000	.....	5,000	18,000
1820	.....	800	365	665	.....	500	1,965
1821	.....	1,000	1,073	1,473	.....	800	3,273
1822	.....	1,200	2,240	2,740	.....	1,000	4,940
1823	.....	1,300	5,823	6,523	.....	1,200	9,023
1824	.....	1,700	9,541	10,441	.....	1,500	13,641
1825	.....	2,000	28,393	29,493	5,306	7,006	38,499
1826	.....	2,700	31,280	32,780	16,835	19,335	54,815
1827	.....	4,000	32,074	34,274	29,493	32,893	71,167
1828	.....	6,200	30,233	33,233	47,181	52,481	91,914
1829	7,000	16,800	25,110	29,110	78,293	87,293	133,203
1830	42,000	58,200	41,750	46,850	89,984	104,584	209,634
1831	54,000	78,300	40,966	47,166	81,854	104,854	230,320
1832	84,500	121,700	75,000	82,700	209,271	243,771	448,171
1833	111,777	161,777	123,000	132,100	250,588	298,333	592,210
1834	43,700	53,008	106,244	128,874	226,692	274,977	456,859
1835	90,000	108,900	131,250	158,812	339,508	410,805	678,517
1836	103,861	125,360	148,211	178,891	432,045	521,478	825,729
1837	115,387	139,041	223,902	269,802	523,152	630,398	1,039,241
1838	78,207	94,083	213,615	256,979	433,875	521,951	873,013
1839	122,300	146,760	221,025	265,230	454,538	545,446	957,436
1840	148,470	177,867	225,318	269,932	467,796	560,421	1,008,220
1841	192,270	229,955	143,037	171,072	607,005	725,978	1,127,005
1842	252,599	301,856	272,546	325,692	551,504	659,047	1,286,595
1843	285,605	340,441	267,793	319,209	687,312	819,276	1,478,926
1844	365,911	435,434	377,002	448,633	853,465	1,015,623	1,899,690
1845	451,836	536,329	429,453	509,761	1,093,796	1,298,336	2,344,426
1846	518,389	614,291	517,116	612,783	1,249,154	1,480,247	2,707,321
1847	583,067	689,185	633,507	748,805	1,598,278	1,889,165	3,327,155
1848	685,196	808,531	670,321	790 979	1,672,191	1,973,185	3,572,695
1849	732,910	862,635	781,656	920,009	1,650,101	1,942,168	3,724,812
1850	827,823	972,692	690,456	811,286	1,769,691	2,079,387	3,863,365
1851	1,156,167	1,355,028	964,224	1,130,071	2,308,525	2,705,591	5,190,690
1852	1,284,500	1,502,865	1,072,136	1,254,399	2,536,653	2,967,884	5,725,148
1853	1,475,732	1,723,655	1,054,309	1,231,433	2,555,450	2,984,765	5,939,853
1854	1,603,478	1,868,052	1,207,186	1,406,372	3,066,208	3,572,132	6,846,556
1855	1,771,511	2,060,267	1,284,113	1,493,423	3,551,893	4,130,852	7,684,542
1856	1,972,581	2,285,194	1,351,976	1,568,285	3,571,800	4,143,288	7,999,767
1857	1,952,603	2,251,114	1,318,541	1,526,871	3,373,797	3,906,857	7,694,842
1858	2,186,094	2,527,125	1,380,030	1,595,315	3,236,843	3,741,790	7,864,230
1859	2,731,236	3,151,846	1,628,311	1,879,071	3,448,708	3,979,809	9,010,726
1860	2,941,817	3,388,973	1,821,674	2,098,569	3,749,632	4,319,576	9,807,118
1861	3,055,140	3,513,411	1,738,377	1,999,134	3,160,797	3,634,916	9,147,461
1862	3,145,770	3,608,198	1,351,054	1,549,658	3,432,584	3,937,175	9,095,031
1863	3,759,610	4,304,754	1,894,713	2,169,446	3,911,683	4,478,877	10,953,077
1864	3,960,836	4,526,635	2,054,669	2,348,233	4,161,970	4,756,532	11,631,400
1865	3,255,658	3,720,717	1,822,535	2,082,858	4,356,959	4,979,457	10,783,032
1866	4,736,616	5,413 958	2,128,867	2,433,280	5,464,209	6,245,599	14,092,837
1867	5,328,322	6,089,272	2,062,446	2,356,867	5,161,671	5,899,505	14,345,644
1868	5,990,813	6,846,699	2,507,582	2,865,820	5,335,737	6,097,947	15,810,466
1869	6,068,369	7,279,543	1,929,523	2,313,989	5,633,855	6,782,146	16,375,678
1870	7,554,969	8,814,024	2,990 878	3,489,564	4,728,242	5,516,312	17,819,700
1871	6,713,773	*7,690,251	2,249,356	2,568,764	6,234,974	7,120,340	17,379,355
1872	9,191,171	*10,750,050	3,610,674	4,202,824	6,126,468	7,131,209	22,084,083
1873	10,047,241	*11,744,141	3,263,168	3,801,447	6,294,454	7,335,333	22,880,921
1874	9,513,042	*10,241,032	3,868,749	4,139,561	6,810,087	7,286,793	21,667,386
1875	10,519,998	*11,062,520	2,731,311	2,867,876	6,393,441	6,713,113	20,643 509
1876	8,100,000	*8,530,000	3,800,000	3,970,000	6,200,000	6,500,000	19,000,000
1877	7,900 000	*8 323 000	4,200,000	4,400,000	8,200,000	8,600,000	21,323,000
1878	7,475,000	*7,925,000	3,245,000	3,410,000	6,520,000	6,940,000	18,275,000
Total..	141,288,795	159,614,369	67,030,696	75,802,227	144,965,548	164,686,236	400,162,832

*Includes the Loyalsock region in Sullivan County, opened in 1871. The production of this region has been as follows: 1871, 23,122 tons; 1872, 51,527 tons; 1873, 32,058 tons; 1874, 36,268 tons; 1875, 16,522 tons; 1876, 30,000 tons; 1877, 23,000 tons; 1878, 37,000 tons.

AUCTION SALES.

The only company that sold coal at auction during 1878 was the Delaware, Lackawanna, and Western Railroad Company. The sales were, almost without exception, manipulated in such a way that the prices reported as received do not express the actual market value of coal at the dates of the sales; but, as the same feature was noticed in 1877, a comparison of those quoted will show pretty well the differences in prices between the two years.

The sale of November, 1877, averaged only $2.35 per ton. Owing to indications of a combination in 1878, the sale of December 28th showed an average of $2.69, and, after the forming of the combination, the sale of January 30th showed an average of $3.32. The February sale showed a small falling off; but after that, there was an advance until $3.79 was reached in September, when a decline of 4c. followed during the next two months, and the sale of December, 1878, averaged but $2.72. In 1877 the Delaware, Lackawanna, and Western RR. Co. sold 966,700 tons of coal at auction at an average price of $2.70 per ton. In 1878 it sold 675,000 tons, at an average price of $3.46 per ton, or an increase of 76c. in price. This will perhaps represent as nearly the difference between the average selling prices of coals in 1877 and 1878 as any figures we can obtain.

RECORD OF SCRANTON AUCTION SALES, 1878.

DATE.	Steamer.		Broken.		Egg.		Stove.		Chestnut.		Pea.		Total tons.	Average of all.
	Tons.	Average price.	Tons.	Average price.	Tons.	Average price.	Tons.	Average price.	Tons.	Average price.	Tons.	Average price.		
January	5,000	$3.09	8,000	$3.12½	8,000	$3.15	22,000	$3.57	7,000	$3.10½	.....	.....	50,000	$3.32
February	5,000	3.11½	7,000	3.07½	6,000	3.15½	22,000	3.55	7,000	3.00	3,000	$3.12½	50,000	3.23
March	5,000	3.25	5,000	3.22	5,000	3.40	20,000	3.69	5,000	3.18	.....	.....	40,000	3.47½
April	6,000	3.30½	10,000	3.30	7,000	3.45	20,000	3.77	7,000	3.15	.....	.....	50,000	3.49
May	5,000	3.42½	10,000	3.45	10,000	3.56	20,000	3.75	5,000	3.25	.....	.....	50,000	3.59
June	6,000	3.47½	12,000	3.48½	10,000	3.58½	15,000	3.89	7,000	3.25	.....	.....	50,000	3.59
July	.....	.....	15,000	3.48	15,000	3.59	15,000	3.90	5,000	3.22½	.....	.....	50,000	3.59
August	.....	.....	15,000	3.52½	10,000	3.66½	20,000	3.98½	5,000	3.37½	.....	.....	50,000	3.72
September	.....	.....	15,000	3.56	10,000	3.68	20,000	4.07½	5,000	3.52½	.....	.....	50,000	3.79
October	5,000	3.46	10,000	3.57½	10,000	3.67½	25,000	4.05	10,000	3.32½	.....	.....	60,000	3.74
November	5,000	3.46	15,000	3.57½	10,000	3.67½	35,000	4.05	10,000	3.32½	.....	.....	75,000	3.74
December	5,000	2.41½	20,000	2.55	20,000	2.67½	40,000	2.98	15,000	2.42½	.....	.....	100,000	2.72
	47,000	$3.01	142,000	$3.29	121,000	$3.40	274,000	$3.73	88,000	$3.10	3,000	$3.12½	675,000	$3.46

BITUMINOUS COAL.

The bituminous coal trade was fairly active during the year, having been greatly benefited by the anthracite combination, which diverted a portion of that trade to the Cumberland and Clearfield. The continued depression in manufacturing, the economy of individuals, and the high transportation rates, both from the Cumberland and the Clearfield basins, operated to reduce the trade considerably, and would have reduced the output of these fields to a marked extent had it not been for the combination of the anthracite producers.

Some 40,000 to 50,000 tons of English coal were delivered in this harbor for sale; besides this, most of the steamships running to Great Britain purchased coal there for the round trip, having so little freight coming out as to require ballast.

CUMBERLAND.

The output of the mines in the Cumberland field, during the past three years, is given in the following table. It has been apparent, from an inspection of these returns for a number of years past, that the policy of the Cumberland and Pennsylvania RR. Co. (Consolidation Coal Co.), in charging exorbitant freights, was gradually strangling the trade of this important field. Naturally, the collieries situated near the center of the field, and which had the highest tolls to pay, were the first and heaviest losers—those at the extremities of the field holding the trade the longest. It has long been evident that, without another outlet from the field, the "freezing-out" policy of the company owning the only railroad would effectually destroy its trade, and render property in it comparatively worthless. After much opposition in the interest of the existing monopoly, the construction of a new road from the center of the field at Lonaconing to the canal at Cumberland seems to be assured, and another season, it is hoped, will see it in operation. The effect of this road, in benefiting the Cumberland trade, will not be measured solely by the lessened transportation charges it will insure to every part of the field; but, in depriving the Consolidation Coal Company of the ability to make up its losses in mining by heavily taxing its rivals in transporting their coal, it will oblige that company to join more heartily in movements aiming at a reduction in cost of mining coal. Among other economies resulting from the new state of things, we may therefore expect to see a reduction in wages to perhaps 30 cents, and the adoption of other economies which will so lessen the cost of this coal as to secure for it much larger markets, and by thus affording steady employment to the miners, make them better off at the reduced wages than they now are at 40 cents per ton as the price of mining.

NAME OF COMPANY.	1876.	1877.	1878.
	Tons. cwt.	Tons. cwt.	Tons. cwt.
Borden	143,147 07	97,866 02	120,047 09
Consolidation	342,198 11	334,107 05	390,097 18
Blaen Avon	43,228 09	33,701 00	28,304 02
Hampshire and Baltimore	92,945 09	90,777 03	17,878 07
George's Creek Coal and Iron Company	197,063 19	121,302 15	87,110 03
New Central	240,269 04	345,542 06	351,677 14
Maryland	76,237 03	119,000 01	119,400 16
American	127,758 18	117,655 08	105,468 18
Atlantic and George's Creek Coal Company	146,097 08	92,482 08	79,377 19
Piedmont	35,983 19	35,284 15	23,312 03
Swanton	66,862 15	48,800 00	37,335 00
Potomac	58,120 10	63,229 05	55,956 00
George's Creek Mining Company	61,884 00	1,724 11	.....
Franklin	64,011 13	45,215 12	134,480 19
George's Creek Valley Mining Company	1,039 03	1,124 08	46 00
Canton Mine	.....	1,212 08	10 00
Union Mining Company	.....	1,665 03	128 04
New Reading	1,605 10	.....	.....
Virginia	102,371 06	.....	.....
Total	1,800,725 04	1,550,028 10	1,650,631 12

The bituminous coal trade was fairly active during the year, having been greatly benefited by the anthracite combination, which diverted a portion of that trade to the Cumberland and Clearfield. The continued depression in manufacturing, the economy of individuals, and the high transportation rates, both from the Cumberland and the Clearfield basins, operated to reduce the trade considerably, and would have reduced the output of these fields to a marked extent had it not been for the combination of the anthracite producers.

An interesting question, not alone for the owners of property in this field, but to eastern manufacturers and consumers generally, is the probable cost at which coal can be put free on board at Georgetown with the aid of the projected road. Without entering into the details of this estimate, which is based upon working data, it is safe to say coal can be delivered, f. o. b., at Georgetown, at a cost, including royalty, not exceeding $2 a gross ton. Even at the lowest price which anthracite attained under the rivalry of 1877, Cumberland coal at this cost would command a very large part of the Eastern market, and secure an increase in the output of the Cumberland field only limited by its ability to produce. In this, as in the anthracite fields, profits are to be sought in large production rather than in high prices, and the projected road referred to bids fair to give the Cumberland field a degree of prosperity to which its advantageous geographical position, and the excellent quality of its coal, so fairly entitle it.

THE CLEARFIELD COAL TRADE.

From the latest returns we estimate the production of this region during 1878 as 1,240,000 tons, against an actual production in 1877 of 1,340,743 tons. The cause of this decrease was in the Pennsylvania Railroad Company looking for too great advantages from the anthracite coal combination, and failing to meet the low transportation charges of the Baltimore and Ohio Railroad Company and the Chesapeake and Ohio Canal. It is estimated that the falling off in shipments from Philadelphia and South Amboy was fully 100,000 tons, representing the total loss of the region. Although the Clearfield region carried off so important a contract as that of supplying the Boston and Albany Railroad Company for a year, yet, after this effort, it appeared to take a position of but little prominence among the larger contracts. This region depends largely upon a steamship trade for disposing of its supplies in New York harbor. Owing to the scarcity of freight from Europe to this country, the steamships have in many cases not only carried enough coal to supply their wants for the round trip, but have been compelled to put coal on barges and offer it for sale in this market, to make room for profitable freight. To such an extent has this been done during the past year, that the quantity of coal usually supplied on regular contracts has been greatly reduced, and surplus foreign coal has been offered so low as to secure a large part of the incidental steamship demand.

Wages in the Clearfield region have been upon the basis of 40c. per ton for mining, and work has been continued with marked regularity and without strikes or other labor troubles.

On account of the reduced demand and low prices obtained, several of the largest mines in this district stopped operations, and, upon the whole, the business was conducted at a loss. With the prospects of an active competition from anthracite coal during 1879, some more of the collieries will probably have to close, unless the Pennsylvania Railroad Co. adopts a very liberal policy as regards freights upon surplus production. At the present time it has not indicated what action it will take.

The efforts to do business with South America have not given encouragement of an important trade in that direction for at least a number of years to come. The business with the West Indies, however, has been liberal and promises much better for 1879.

No effort appears to be making to reduce the cost of producing coal in this district, though there is no question but that if the owners could give constant employment to their men, the rate of wages might be reduced very materially without reducing the aggregate earnings. In fact, it is very evident that some means must be found for reducing the cost of production and transportation of coal in this field during the coming year, or Cumberland coal and anthracite will entirely supplant it in the Eastern market at the low prices which will probably prevail.

THE GAS-COAL TRADE.

We have good authority for the estimate that the consumption of gas coal in 1878 in New York and the immediate vicinity was not over 400,000 tons, and in New England 200,000 tons. This is a decrease of 100,000 tons as compared with 1877, and is accounted for by a lack of consumption in large manufacturing and similar establishments, and a general desire to economize in the use of gas.

In June of 1877 about 275,000 tons of Penn and Westmoreland coal were sold to be delivered up to March, 1879, at $5.50 per ton. Upon this figure it was necessary to make a concession of 25 cents per ton during 1878, and with this large business previously done, it left last year with but little of interest in the way of important transactions. In fact, the trade never knew a more quiet year.

Provincial coals were delivered in this country at from $3.50 to $4.25 per

ton, and the total quantity imported into the New York and New England markets was probably about 100,000 tons.

English gas coals created quite a stir during 1878, Newcastle coal having been, in instances, laid down here at less than $3 per ton. The quantity taken at New York and in the East was much larger than for years past, and amounted to between 40,000 and 50,000 tons, though a large part of this went to supply the steamship trade, in the place of Cumberland and Clearfield coals. Offers are now being made to contract for the delivery here, during the present year, of Newcastle gas coals at $3.75 per ton, and no doubt much of this article will come over as ballast and be offered at prices greatly below that figure. The cost of production in England will certainly be less in 1879 than it was in 1878, and there is every indication of our general exports continuing to greatly exceed our imports, thus allowing coal to be brought over at merely nominal freights.

THE PACIFIC COAST COAL TRADE.

The imports of coal at San Francisco, from January 1st to November 30th, in 1878 and 1877, were as follows:

	1878. Tons.	1877. Tons.
Anthracite	23,564	19,691
Australian	128,150	80,406
Coos Bay	29,718	27,581
Cumberland	8,044	10,608
Bellingham Bay	3,750	10,475
Vancouver Island	119,185	94,501
Seattle	104,430	94,491
English	43,058	89,362
Mt. Diablo	89,320	87,755
Rocky Mountain	371	123
Ione	665	3,068
Carbondale	3,125	177
Ounalaska	450	.....
Carmen Island	100	.....
Chili	...	8,145
Saghalien	.....	190
Total	553,930	526,573

The business upon the Pacific Coast, in coals mined upon the Atlantic Coast, does not amount to much, though an increase is shown in the receipts of anthracite and Cumberland coals this year. Australia has become the leading source of supply to the San Francisco market, and the receipts of that coal show an increase of about 50 per cent for the year, and they amount to nearly one fourth of all the coal received there. Bellingham Bay, Vancouver Island, and Seattle coals each show a moderate increase, while Mt. Diablo did a little more than hold its own. English coals, however, show a falling off of over one half. This is partly due to the failure of the crops in California, in 1877, which increased freights from England to San Francisco.

REVIEW OF THE IRON TRADE OF THE UNITED STATES FOR 1878.

To those connected with other branches of the iron trade than the manufacture of pig-iron, 1878 was a better year than 1877. In pig-iron, prices had reached in 1877 as low a basis as was consistent with solvency to the manufacturers, while economy was greatly strained, so far as the ability of producers was concerned. Nevertheless, the prices at which most of the pig-iron was sold during 1878 were from $1 to $2 per ton lower than at the close of the previous year; the reason for this being that many concerns, financially embarrassed, in their anxiety to realize on their products, were compelled to accept such prices as the market would pay. The losses sustained brought about the failure of several large furnace companies, and have left others in a precarious condition. The iron trade of the East suffered very much from the combination in the anthracite trade. The price of iron declined to a point lower than the cost of production in 1877; yet the price of coal advanced in 1878, thereby widening the margin of loss; while from the uncertainty as to what prices the coal combination would charge during 1878, the furnace companies were unable to enter into important contracts for future delivery, and from this cause the business was reduced, and a portion of it passed to the Western furnaces, never perhaps, to be recovered. Although there were other causes that did even more to depress the Eastern iron trade, yet the anthracite coal combination had a very important influence, and the prospects of open competition in coal in 1879, and of lower prices for fuel, are looked upon with much favor at the furnaces.

The leading causes of depression in the iron trade are an excessive production and productive capacity, and these have had their greatest influence upon that portion of the trade that comes most prominently before us in this review. The very low prices and active competition are rapidly exhausting the finances of the less favored and less economical concerns, and it is only a question of time when the country will be supplied by those best managed and most advantageously located, at prices that will leave these a small margin for profit. From that point the condition of trade will improve, until all of the available furnaces are again put in blast, and prosperity will once more rule.

The wages of iron-workers have been reduced to so low a point that it is not reasonable to look for further concessions in this item of cost.

In the application of science and skill at the works much has been done, while in internal economies salaries of officials have been cut down, and all that was in the power of those in charge at the furnaces has been done to reduce the cost of production. In iron-ore mining, and the royalty charges on ore, there is still room for much improvement. The regulation of the price of coal to the requirements of the iron producers is not within their hands, but the laws of trade are steadily working it out for them. In freights on all materials used at the furnaces, and on the manufactured iron carried to market, there is still room for a concession. The cost of iron is not yet as low as it was previous to the war, nor are there indications that it will soon attain that standard; but with the progress that has been made in the art of iron making, and the improved modes of mining, there is no reason why the cost of manufacture should not be reduced to even a lower point than ever heretofore, and it can only be a matter of time until such is the case.

To a foreign demand we must look for a market for a large portion of the iron produced in the East; and if we can not dispose of it in the form of pig or bar-iron, we must do so in a more advanced form of manufacture. To do this, we must have iron so cheap that we can meet all foreign competition, not only at present prices, but at those lower rates which seem to be probable in several European countries. The railroads and coal companies whose prosperity is largely dependent upon a prosperous iron trade, should constantly bear this fact in mind, in the establishment of freight prices, even though they must wait some time for the reward for their sacrifices.

We have been unable to obtain at this early day any reliable statistics of the production or consumption of iron in 1878; but while there was a seeming quietness during the whole year, we believe a very favorable showing will be made.

The railroad interests of the country were large consumers of iron and steel during 1878, and promise to take even larger quantities in 1879. During the past year, a very large acreage was taken up in the West for agricultural purposes, and this year will probably show a continued movement in that direction, so that in even ordinary years we may expect an immense grain movement in the future. Though this large production of grain and other products of the farm may result in lower prices to the farmers, and perhaps lower freights to the carrying companies, yet, in moving it, rails and rolling stock will be worn out, and a large demand for iron and steel will be made. The replacement of rails and rolling stock upon our vast railroad system already constitutes our most important market for iron and steel. It is encouraging to note an increase in new roads built in 1878 over 1877. The *Railroad Gazette* of Dec. 27th reports 2263 miles of roads built in 1878 as compared with 2019 miles in 1877, 2278 in 1876, 1333 in 1875, 1884 in 1874, 3630 in 1873, and 7160 miles in 1872.

During 1878, several new roads were built and old ones extended in the far West, where the development of immense mineral resources will probably induce the construction of many new lines during the coming year. The railroads built in 1878, when equipped, will probably have taken over 300,000 tons of iron and steel; while it is estimated that the average annual requirements of the existing roads in replacement of rails and rolling stock will equal say 1,200,000 tons. The latter item may mislead unless we bear in mind that a considerable part of it is the product of re-manufacture, and does not therefore represent pig-iron.

During the decline in the prices of iron, and especially of old rails, many railroad officials, where their roads were in a sufficiently strong financial condition, stored the rails taken from their tracks with the expectation of getting better prices than the ruling rates at the time. During the past year, however, they appear to have grasped the situation, and 1878 closed with a smaller stock of old rails on hand than for several years past, and, as the amount taken up to give place for steel rails was very large, the consumption of old rails must have been very great.

The erection of the elevated railroads in this city created a demand, during 1878, for about 50,000 tons of iron, and the extension of the present lines, as now projected, will take about 20,000 tons in 1879. The great success and popularity of these roads will probably lead to the construction of additional lines in this and other cities, and from this source a very liberal demand for iron may be looked for in the future. One quite large order for pipes is almost certain; but outside of this there is but an uncertain, though probably a good general business to count upon in 1879.

The latest official information from the Bureau of Statistics gives the exports for only the first nine months of the year. By these figures we learn that where the exports of pig-iron for the same period in 1877 were over 5000 tons, this year they were only about 800 tons. Bar-iron shows a slight falling off, while boiler-plate and rails show a liberal improvement. It is very satisfactory, however, to note a rapid growth in the foreign demand for our locomotives, stationary engines, boilers, machinery, cutlery, etc.; for it is in such articles that we must dispose of, in foreign countries, a portion of our surplus production of iron.

With hardly an exception, our imports of foreign iron are steadily decreasing, and they are now confined to special brands that we shall probably continue to take, not because they are cheaper, but because they are considered necessary. Scotch pig-iron is being steadily superseded

by our domestic irons. An important quantity of spiegeleisen figures in our imports, not being produced in this country in sufficient quantity to supply the wants of our large and growing Bessemer steel industry. As we have received most of our foreign iron from Great Britain, the following table of the exports of iron from that country to the United States during the eleven months ended November 30th, in 1878, 1877, and 1876, will be interesting :

	1878. Tons.	1877. Tons.	1876. Tons.
IRON—Pig	29,054	34,529	36,205
" Bar, angle, bolt, and rod	4,539	5,200	2,338
" Railroad, of all sorts	717	1,051	349
" Hoops, sheets, and plates	957	5,021	6,882
" Cast or wrought, and all other manufactures unenumerated.	2,625	2,165	3,964
Tin plates	100,235	97,918	82,580

A considerable part of these imports were received at San Francisco, which is wholly dependent on importation for its supplies.

Although there is yet in store financial embarrassment to many now engaged in iron manufacture, and from this cause prices may, for a time, continue upon the present low basis, or even temporarily go lower, yet the tide has turned, and those who are in a position to pass through 1879 will probably find prices more satisfactory, and if little or no profit is left to producers or manufacturers, the indications for this great industry are at least much more hopeful than they have been since 1873.

Prices are so low now that they must soon regulate the supply to the demand, and additional furnaces will scarcely blow in until at least a small profit is evident, and little new capital will be invested for some time to come.

Pennsylvania and Ohio possess the ability to supply more than all the present wants of the United States. While the other States have a capacity sufficient to supply their own wants, these two States must suffer for years to come. Especially is this true of Pennsylvania. The prospects of the Southern and Western furnaces are excellent.

The table below shows the range of prices of iron in New York during each month of 1878.

AMERICAN PIG-IRON.

The year opened with $18 for No. 1 foundry iron, and after the formation of the coal combination in January, with the prospects of increasing the price of coal and thereby the cost of making iron, there was an inclination to advance prices, and for several months some of the companies did ask more. But although the cost of making pig-iron was increased over that at the close of 1877, prices declined, reaching in June $16 for the best brands of iron, and good Lehigh iron was sold for even less than this. The business of the year was mostly confined to supplying the immediate wants of consumers, and there were few weeks in which large amounts were sold. The market was almost entirely free from speculation. The year closed with prices as low as at any previous time, with no indications of an early advance. Should there not be a combination of the coal companies in 1879, the cost of making iron will again be reduced, and consumers will get the advantage of it. In 1877, under an active competition, the furnaces on the Hudson River were able to secure very cheap fuel, and, producing pig-iron at a small cost, they sold it at exceedingly low prices. During 1878, they did not attract so much attention. In 1879, without a coal combination, they will probably be again able to purchase their coal cheap, and to sell their products for less than heretofore. As but few, if any, furnaces can now cover cost of production, this would probably close other works, and reduce the make, when a better market might be anticipated.

Some years ago, large quantities of Spanish ore were imported for making Bessemer iron. It is said that during 1879 this business will be greatly increased. The very low freights from Europe to this country make this probable.

SCOTCH PIG-IRON.

The business in this description of iron has dwindled down to supplying a local demand in small lots. Owing to lower prices in Scotland, there has been a steady decline here, in all amounting to about $3 per ton for the year, at the close of which there was a stock of less than 1000 tons in this market. According to the latest mail advices, there were 92 furnaces in blast, as against 88 a year previous. Stocks in Scotland steadily accumulated during the year, while shipments fell off over 50,000 tons. Coltness was quoted at 50s. 6d. ; Glengarnock, 47s. ; and Eglinton, 43s, 6d. ; the same brands at the close of 1877 being quoted respectively, as follows : 65s., 58s. 6d., and 53s. 6d., showing an average decline this year of 12s. per ton.

RAILS.

The business in steel rails was more satisfactory than that in any other branch of the iron business. Prices recovered fully $3 per ton from the lowest point during the latter part of 1877, after which, in the competition for the business of 1879, they again declined, but not so low as before. It is estimated the production of steel rails, in 1878, was 550,000 tons, while the capacity of the mills that were in operation was 700,000 tons, and the total capacity of all of the mills 750,000 tons. The Vulcan Works, at St. Louis, are idle, and it is said that they will continue so during 1879. It is estimated that there were sold, in 1878, for delivery in 1879, between 300,000 and 400,000 tons, and it is thought that the demand for this year will be from 50,000 to 100,000 tons greater than in 1878. A continuation of this rapid increase in demand is very encouraging to our mills, as it will probably not be more than two years before the works will be driven to their full capacity. The great consumers of steel rails are roads that wear them out very rapidly, and as the life of the steel rail is found much below what it was estimated to be, the demand will be continuous. Iron rails were in very small demand, and most of those made were old rails re-rolled. The price was fairly steady throughout the year. For the first nine months of this year our exports of rails amounted to less than 6000 tons. During eleven months ending Nov. 30th, the past three years, Great Britain's exports were approximately as follows :

	11 MONTHS ENDING NOVEMBER 30TH.		
	1876—Tons.	1877—Tons.	1878—Tons.
Total of iron rails	182,240	165,214	108,128
" " steel rails	161,388	217,426	238,027
Total of rails	343,628	382,640	346,155

During the same periods her exports of all descriptions of railway iron were distributed as follows :

To	1876. Tons.	1877. Tons.	1878. Tons.
United States	349	1,051	717
Russia	80,085	79,986	57,067
Turkey	130	299	500
British India	50,875	89,547	100,057
British North America	59,833	36,001	33,861
Egypt	579	1,003	2,857
Australia	25,224	78,556	68,904
Brazil	17,237	23,328	15,005
Holland	693	947	116
Spain and Canaries	16,501	20,315	24,256
Sweden and Norway	40,763	56,897	23,647
Chili	3,194	922	1,334
Denmark	3,932	3,632	5,062
Peru	2,534	1,285	3,535
France	137	151	120
Germany	12,900	20,901	36,980
Belgium	200	115	224
Italy	18,749	8,849	18,527
Other countries	54,755	32,272	29,114
Total	388,670	456,057	421,883
Total exports from Great Britain of Iron and Steel to all countries	2,063,860	2,171,070	2,150,075

OLD RAILS.

These were very extensively used during 1878. Prices, however, de-

MONTHS.	AMERICAN PIG-IRON.			SCOTCH PIG-IRON.			RAILS.*			WROUGHT SCRAP.
	No. 1.	No. 2.	Forge.	Coltness.	Eglinton.	Glengarnock.	Iron.	Steel.	Old	
January	18 a..	17 a..	16a..	26 a25	24 a23	24½a24	37a32	43a40	19½a18	23a22
February	19 a18	18 a17	17a16	26 a25	23½a23	24½a24	37a32	43a41	21 a19	23a22
March	19 a17½	18 a16½	17a16	26½a25	23½a23	25½a24	36a33	44a41	19 a18	22a21
April	19 a17½	18 a16½	17a16	25 a..	23 a..	24 a..	36a33	46a42	18 a.	22a21
May	18½a16½	17½a15½	17a14½	25 a24½	23 a22½	24 a23½	36a32	46a43	18 a17	22a20
June	18½a16½	17 a15½	16a14½	24½a24	22½a..	23½a..	36a31	44a42	18 a17	21a20
July	18 a16½	17 a15½	16a14½	24 a..	22½a..	23½a..	36a31	44a42	18 a17	20a..
August	18 a16	17 a15	16a14	24 a23	22 a21½	23 a..	36a32	45a41½	18½a17	21a19
September	18 a16	17 a15	16a14	24½a23½	22½a21½	24 a23	36a32	45a42	18 a16½	21a19
October	17 a16	16 a15	15a14	24½a23	22½a21½	24 a22½	36a32	45a42	20 a17½	21a20
November	17½a16	16½a15	15a14	23½a23	21¾a..	23 a22½	36a32	44a41	28 a18	21a20
December	18 a16	17 a15	16a14	23½a22	21¼a19½	23 a22½	36a32	42a41	20 a19	22a21

* Prices at mills.

clined, reaching the lowest point in September, after which there was an active demand, the supply became quite small, and prices reached the highest point of the year. The indications for the current year are that the supply will not be equal to the demand which would take place, were the prices not advanced. This is an encouraging feature for the producers of pig-iron.

WROUGHT SCRAP.

was in only moderate demand, declining during the first nine months of the year, after which a steady improvement set in.

EXPERIMENTS ON THE REMOVAL OF CARBON, SILICON, AND PHOSPHORUS FROM PIG-IRON BY ALKALINE CARBONATES.*

By Dr. Thomas M. Drown, Lafayette College, Easton, Pa.

In the course of some experiments on the analysis of pig-iron, I heated, in a platinum crucible, some borings of a graphitic pig-iron with sodium carbonate. When the crucible was at a full red heat and the carbonate was thoroughly fused, I noticed a lively ebullition of the mass and an escape of gas, which burned on the surface. On investigation, this gas proved to be carbonic oxide, and on examining the borings in the bottom of the crucible after an hour or two, they were found to be perfectly malleable, although unchanged in general form and appearance. Analysis showed that the carbon was completely removed.

I then repeated the experiment, to ascertain whether the silicon and phosphorus were affected, and found that these elements too were largely removed, and could be found in the fused mass as alkaline silicates and phosphates.

In order to ascertain whether the removal of the silicon and phosphorus was merely a surface action or whether the reaction really extended into the mass of the iron, I tried the following experiments:

A number of bars of pig-iron were cast about one foot long and planed down accurately to one inch section. These were immersed in a large wrought-iron pot full of molten sodium carbonate made by fusing the commercial bicarbonate of soda. Through the kindness of Mr. Frank Firmstone, Superintendent of the Glendon Iron Works, Easton, I was enabled to keep this pot at a reasonably constant high temperature for a long time in one of the hot-blast ovens.

One of the bars was removed from the pot every twenty-four or forty-eight hours, according to the rapidity of the action, and, after cooling, was broken and the fracture examined. The change from pig-iron to malleable iron was progressively inward and always sharp and easily recognized, the rate of progression being in a decreasing ratio with the time. The temperature of the oven had evidently some influence on the rate of progress, but a sufficient number of experiments were not tried to settle definitely what temperature was the most favorable. In some cases the iron was converted on the surface to a black oxide, and the oxidation of the iron once commenced progressed at the same rate as the oxidation of the carbon, while in other cases the carbon was removed to a depth of $\frac{5}{16}$ of an inch or more, while the surface of the bar preserved the original marks of the planer without a trace of oxidation. I do not know what were the conditions which determined the oxidation of the iron.

The following analyses of the successive layers of the bars subjected to this treatment, made under my direction by Mr. P. W. Shimer, then a student in the Mining-Engineering Department of Lafayette College, show the nature and progress of the reaction between the carbon, silicon, and phosphorus of the pig-iron and the alkaline carbonate.

Bar No. 1 was immersed in the bath for ten days, and the oxidation was noticed to have extended about $\frac{3}{16}$ of an inch. After removing a small layer of scale, two layers were planed off about $\frac{1}{16}$ of an inch thick each and subjected to analysis, together with planings from the interior of the bar, and also of a portion of the same bar which had not been treated.

The following are the results in duplicate:

	Original bar.	First layer.	Second layer.	Interior.
Carbon	3·576	0·115	0·269	3.587
	3·554	0·101	0·378	.....
Silicon	1·384	0·824	1·059	1·383
	1·375	0·819	1·126	1·370
Phosphorus	0·866	0·392	0·704	0·912
	0·872	0·494	0·640	0·910

The lack of close agreement in some of these duplicate analyses is without doubt due to the difficulty of getting average samples of the different layers.

Bar No. 2 was identical in composition with No. 1. It was immersed seven days and showed a slightly greater depth of conversion than No. 1, without the least oxidation of the iron. It was planed in three layers, and the analyses resulted as follows:

	First layer.	Second layer.	Third layer.	Interior.
Carbon	0·047	0·166	0·942	3·293
Silicon	0·574	0·607	1·281	1·362
Phosphorus	0·015	0·201	0·776	0·911

The first layer in bar No. 2 corresponds to the layer of scale or oxide in bar No. 1, hence the lower percentages of carbon, silicon, and phosphorus in the outside layer of No. 2.

A bar of white iron $\frac{5}{8}$ inch by $1\frac{1}{4}$ inches was immersed in the bath for ten days, and on removal it was found to be sufficiently malleable to be forged hot to a point. The analyses of this bar and of the original white iron are as follows:

	Original white iron.	Outside layer.	Interior.
Carbon	2·199	0·128	0·381
Silicon	0·947	0·781	0·919
Phosphorus	0·607	0.415	0·522

The reaction with the carbon of white iron is, as might be expected, much more energetic than with gray iron, and the conversion to malleable iron more quickly effected. No determinations of sulphur were made, but I think that there can be no doubt but that it would share the same fate as the other elements.

Aside from the interesting character of this reaction of alkaline carbonates on the carbon, silicon, and phosphorus of pig-iron, one which it seems to me was hardly to have been anticipated, it is further a matter of interest and surprise that the silicic and phosphoric acids in combination with the alkali should be actually removed through an appreciable mass of iron. The experiments were not continued long enough to determine to what depth the change could be carried.

The practical applications of this process will readily suggest themselves. The removal of the carbon, silicon, and phosphorus from thin plates of cast-iron could be effected in a short time, and the process becomes at once one for the preparation of malleable castings; or, the converted product might, when it had a suitable composition, be melted for steel.

On the completion of my experiments, I was surprised to learn that Mr. A. K. Eaton, now of Brooklyn, N. Y., had discovered this action of alkaline carbonates on pig-iron many years ago, and had patented the process in 1860. On consulting his patent specification I find that he fully recognized all the reactions which I have described. His claim was for a new process of making steel. To quote from his patent: "The bars converted into steel by this process may be worked directly under the hammer or in rolls, or may be melted, cast into ingots, and hammered."

Although I can not claim more than having rediscovered a process which I think has been lost sight of, yet I think the analytical results given above, showing the nature of the process, will not be without novelty to some of the members of the Institute.

LAFAYETTE COLLEGE, EASTON, PA., September, 1878.

NOTE.—Since preparing this paper for publication, my attention has been called by Prof. G. J. Brush, of New Haven, to an article by Ch. Tissier in the *Technologiste* of July, 1857 (also in *Dingler's Polytechnisches Journal*, Vol. 146, page 118, and in abstract in the *American Journal of Science* (2) xxxi., p. 120), giving an account of experiments made by him on the action of carbonate of soda on cast-iron. He recognized the removal of carbon and silicon, and inferred that the phosphorus and sulphur were likewise removed. Cast-iron subjected to this treatment he found became malleable. T. M. D.

* A paper read before the American Institute of Mining Engineers at the Lake George Meeting, October, 1878.

ON THE USE OF IRON LINING WALLS IN THE SAARBRUECKEN MINES.*

The use of iron for securing the walls of shafts, levels, and other excavations in the Saarbrücken mines has been adopted in special cases for about fifteen years, one of the first instances being a main air-way of the Duttweiler mine, where timbering was replaced by cast-iron door-posts with caps of old mine rails in 1862. The general substitution of round for rectangular shafts in the year 1866 gave the first impulse to the systematic use of wrought-iron linings, while about the same time the peculiar local conditions of the mine of Sulzbach-Altenwald led to a series of experiments on a very large scale on the application of the same material to securing levels. The favorable results obtained in these experiments, together with the fall in price of iron, have been followed by a systematic adoption of the new method to a very considerable extent, and at the same time wrought-iron has been in many instances substituted for wood as a material for sleepers in the railways underground.

The first shaft in which iron lining was partially used, apart from those with water-tight cast-metal tubbings, is the No. 3 Dechen pit of the Heinitz mine, sunk in 1867. This is a pumping pit 18 feet in diameter, and the object in lining it was not so much to resist an inward thrust as to protect the walls from the action of air and water. The lining consists of 2-inch oaken planks hooped with external rings of double angle or T iron at intervals of 39 inches. The flat side of the ring is turned outward and the stem bedded in the wood, the empty space between the lining and the shaft being afterward filled with concrete. In the Richard and Victoria shafts, commenced in 1866, respectively of 12 and 14 feet diameter, the use of iron rings was substituted, in 1868–69, for the walling, adopted in the first 120 yards sunk. The rings are of ⎽ section with the flat side outward in contact with the wall of the shaft. They are put together in halves with butt-joints secured by fish-plates with four bolts, and are spaced, as in the former instance, 39 inches vertically apart. Every third ring is supported upon cross-timbers, the proper distance between the intermediate ones being preserved by struts, which, with the planks lining the walls, are all of oak. The cross-bearers for the shaft-guides are bedded into the hollow formed between the flanges of the rings. The adoption of the above system was followed by greatly increased speed in sinking, an advance of 16 meters (52½ feet) and upward per month having been attained, as compared with from 5 to 8 meters, which was the current rate when timbering with subsequent walling was used. As, however, the substitution of dynamite for gunpowder in blasting took place about the same time, the saving can not be entirely credited to the suppression of masons' work. The saving in expenditure has, however, has been very considerable, the iron-lined portion of the Victoria shaft costing £21 10s. per yard, as compared with £57 per yard in the upper masonry-lined portion.

Numerous other examples are given of the application of the method upon an extended scale, there being now thirteen shafts in the Saarbrücken district in which iron lining is used as soon as the loose surface ground is passed through. The standard system of ing that has been adopted is of ⎽ section, 215 millimeters (8½ inches) on the flat, 87 millimeters (3½ inches) depth of flanges, and 14 millimeters (½ inch) thick. Each ring is made up of four segments united by cast-iron fish-plates with four bolts to each joint, and weighs, finished, about 16 cwt. Heavy bearing timbers are put in about every fourth or sixth ring. In one of the newest sinkings, the Tränkelbach pits, which are to be carried to a depth of between 700 and 800 yards, the use of timber is almost entirely given up, the cross-bearers for the shaft-guides being of I and [iron, while the guides are partly of unequal armed I and partly of T iron section. In this case four rings are set at one time working from below downward, the vertical distance piece being first screwed on to the ring

* Abstract of a paper in the *Oesterreichische Zeitschrift für Berg- und Hüttenwesen* vol xxvi., pp. 249, 261. From the Proceedings of the Institution of Civil Engineers of London, edited by James Forrest, Secretary.

last finished, when the segments of the next ring below are lowered, joined, and screwed into position, and so on until all four are fixed. They are then secured by wedges at the back, the lining planks of oak are fixed, and the empty spaces are packed up with broken rock. Afterward the cross-girders are fitted and screwed into place, and the shaft is ready for work. All the iron work receives two coats of red lead, and the fitting of the different parts is very carefully gone over at the surface in order that the building-up in the shaft may be accomplished as quickly as possible.

The latest development of the principle is seen in an upcast shaft of the Camphausen mine. This is 12 feet in diameter, and is lined with rings of a somewhat lighter section than that given above, with a casing of sheet-iron 5 millimeters thick. The struts between the rings are of ⎽ iron, and are placed at eight equidistant points around the circumference, the joints being further stiffened by bracket pieces at the junctions. The lining-sheets are 39 inches high, so as to fill up the space between two rings, and of a length equal to one fourth of the circumference. They are made fast, by screws, to the rings as well as to the upright pieces and brackets. In fixing the lining a series of ten rings are placed at a time working from below upward. The bottom is supported upon two cross-bearers of railway iron, which are removed as soon as the connections with the upper part have been made good.

The second part, p. 261, of the original deals with the question of iron frames for levels. These, though possessing undoubted advantages in the case of loose or friable ground, were, until the recent fall in the price of iron, too costly to be generally used, being considerably dearer than timber, and in some cases even than masonry. During the past two years of low prices, however, their use has been considerably extended, the requirements of the Saarbrücken mines for 1878 under this head being given as about 2000 tons of iron.

Four standard systems of frame have been adopted for levels, either of I (unequal-webbed) or ⎽ section, bent with the broad flange or flat side outward. The first of the above sections is used in two substances, the lighter weighing 11·2 kilograms (25 lbs.), and the heavier, 14 kilograms (31 lbs.), per meter. For galleries with double lines of rails, the frames are of T iron with flat tops and inclined side legs. They are made in two parts united by a fish-joint at the center of the cap, the weight being 83 kilograms (183 lbs.) per frame.

For single-line galleries, similar frames of light I iron, weighing 55 kilograms (121 lbs.) are used. Where there is much vertical thrust, the larger levels are secured by closed elliptical rings put together in two parts, the joints being made in the side parts so as to present a complete arch in the roof and floor. The weight of these is 120 kilograms (264 lbs.). Lastly, in friable ground, complete circular rings weighing 175 kilograms (385 lbs.) each are used; these are also put together in two pieces. In all cases these segments are delivered curved to pattern from the rolling-mills, and are not painted. They are set in the same manner as timber frames, being placed at intervals of ½ to 1 meter, according to the nature of the ground, the intervals being packed with laths, sheeting-boards, or oaken pickets in the ordinary way.

For underground railways, three different systems of iron sleepers have been used. The one most in favor is analogous to Vautherin's plan for full-gauge surface lines. It has ⎽ iron cross sleepers at 2 meters (6½ feet) intervals with vertical key wedges. Some thousands of yards of lines have been laid in the levels on this pattern, but it is still in the experimental stage, as, although it gives a very durable road, it is almost twice the cost of wooden sleepers. In addition to the above applications, iron guides have been substituted for wooden ones in many of the older shafts, and cast-iron gutters have been placed in the main water levels. These are of semi-elliptical section, open above, and lined with cement, and are found to be more easily cleaned and kept in order than channels cut in the rock.

NOTES ON THE ELECTRIC LIGHT.

By Sergius Kern, M.E., St. Petersburg.

Special Correspondence of the Engineering and Mining Journal.

Mr. Philippenko made several interesting communications to the Russian Technical Society, concerning the use of the electric light for different purposes. The cost of one light by the Jablochkoff system is 1 franc, 45 centimes, per hour. When the merchants residing in the Rue de la Paix, Paris, desired to illuminate this street by the Jablochkoff system, the company informed them that they are in the position to supply the necessary apparatus and lamps for 40,000 francs. Certainly, the merchants believed this price too high, and they wrote for an estimate to Mr. Lontin, who answered them that the application of the electric light for the streets, in the present state of this question, is nothing more than a good speculation for the company and not for the proprietors of the shops.

The following estimate of the cost of lighting, by the Jablochkoff process, one of the St. Petersburg streets is rather instructive. The Nevsky Prospect has a length of 9800 feet. The total number of the gas-lamps at present is 280. Instead of every three gas-lamps, one Jablochkoff's lamp may be used, so that for the whole street, 93 electric lamps will be wanted. The cost of all these lamps per hour will be 135 francs. A gas-lamp in St. Petersburg is lighted per year during 3200 hours. Thus, the electric lighting of the Prospect all the year round will cost 432,000 francs. The gas-lamp per year costs 120 francs, and all the lamps (280) 33,600 francs; or, in other words, the Jablochkoff system, as applied in this case, may be ten times dearer than the gas light.

The following notes on the application of this system in Paris may be of some interest:

The Louvre magazine, besides the electric lamps, has a certain number of gas-lamps, for it happened that in some cases the electric light was suddenly extinguished from uncertain causes. Such a compound system of lighting costs the shops four times more than their ordinary gas-lighting, and it was also remarked that the candles, while burning, propagated in the rooms a notable quantity of very fine siliceous dust, in the form of vapor, very injurious to the lungs when inhaled.

Altogether, there is much to be improved in the electric light; the excellent and ingenious system of Jablochkoff candles, adapted with success for big rooms or works, when used for street lighting has a great enemy—its dearness. At the present moment it is cheaper in many large towns to place, instead of one gas-lamp, two, three, four, or even five gas-lamps, than to use the electric light, especially as the lamp-posts will cost a trifle, in comparison with the cost of the electric machines, carbons, steam-power, etc.

SAN JUAN (COLORADO) SILVER MINE.

Special Correspondence of the Engineering and Mining Journal.

We believe now that our turning-point has come and that Ouray is destined to become a wonderfully flourishing camp. Indeed, one may say it is now, for one of the foolish rushes to "new excitements" that occur periodically fortunately took place about a month ago and cleared our camp of its surplus supply of miners and prospectors, and now the working of the Begole Farm, Grand View, and other mines, is employing every man who wants to work.

When I wrote you concerning the Begole "Farm," I had no idea whatever that any negotiations for its sale were pending, but since then the Norfolk and Ouray Smelting Company, John L. Roper, President, has become the owner of the "Mineral Farm," having paid therefor the sum of ($75,000) seventy-five thousand dollars *cash*, no drawback, no "divvy" with some influential individual who helped to make the sale: but with over $35,000 each in their pockets, Augustus W. Begole and John Eckels have gone out to enjoy themselves for a while in the "haunts of civilization," the former to California and the latter to his home in Illinois.

The property aforesaid has been for sale for $75,000 for three years, and every body knew it; but now it is gone. I hear of numerous individuals who were "just going to buy." I came down from camp yesterday morning, chiefly to obtain the facts of the sale, and visited the "farm" on the way. I found them hard at work putting up cabins for the accommodation of a force of thirty to fifty men, and eight men at work stripping ore; others improving the road down to Ouray by making some "turn-outs," blasting out boulders; others bringing up supplies with ox-teams, etc. They were quarrying out the silver fahlerz in huge blocks, and I send you a piece by mail to-day, as I presume the ENGINEERING AND MINING JOURNAL has a cabinet. As soon as they have got about 200 tons out in this way, I believe it is their intention to "run under." Superintendent Corbett intends to keep the smelter going all winter if possible, and to do this he will require, counting iron ore, fluxes, etc., fifty tons every twenty-four hours—twenty to thirty tons of the "farm" ore. As they have only been at it a few days, the work is of course very superficial, but the galena I spoke of in my last seems to be only about two feet deep on an average, and underneath that the gray copper ore in gangue of heavy spar.

They were in hopes, and I thought from what I saw at first that there would be enough of the galena ore to smelt the gray copper ore, but now there does not appear to be much chance of this. But, as the gray copper ore is extremely rich in silver, I don't think the N. & O. S. Co. will grumble at the change.

There are plenty of rich prospects and a few good mines for sale here this winter—the Hidden Treasure, for instance, which I consider one of the most magnificent mines in the country, but which is lying idle. Why it should be so is a matter between the owners, and no one else's business that I know of, but pity 'tis, 'tis true.

The sale of the "farm" has been a surprise to us all, as it was done almost before we had an inkling of it. But Superintendent Corbett is one one of the slow-and-sure kind, who do a great deal and say very little, and we are all confident that he will show the property up to its fullest advantage.

The trial run of the Norfolk and Ouray smelter was a complete success, turning out 13 tons of 650-ounce bullion in about 72 hours. The Superintendent expects to turn out 8 to 10 tons a day when they get into full operation.

W. W.

POISONOUS TIN PLATE.—The Boston *Journal of Chemistry*, commenting on the hidden dangers surrounding us, says: "Attention has recently been called to a new risk of chronic poisoning by the old enemy, lead. What we call 'tin' vessels—that is, sheet-iron coated with tin—are in daily use in every household in the land. They are cheap, durable, and convenient, and have been considered perfectly safe for the thousand culinary purposes to which they are devoted. They *are* safe if the tin plate is honestly made; but unfortunately this is not always to be counted upon. Tin is comparatively cheap, but lead is cheaper; and an alloy of the two metals may be used in place of the dearer one, with profit to the manufacturer though with serious detriment to the user. The alloy is readily acted upon by acids, and salts of lead are thus introduced into food. The Michigan State Board of Health has lately been investigating this subject, having been led to do so by a letter from a physician who found that certain cases of what had been taken for chorea were really *paralysis agitans*, which could be traced to this kind of lead-poisoning. Other cases were brought to light in which children had died of meningitis, fits, and paralytic affections, caused by milk kept in such vessels, the acid in the fluid having dissolved the lead. Malic, citric, and other fruit acids are of course quicker and more energetic in their action upon the pernicious alloy. The danger is the greater, because lead salts are *cumulative* poisons. The effect of one or two small doses may not be perceptible, but infinitesimal doses, constantly repeated, will in the end prove injurious, if not fatal.

"Analysis of a large number of specimens of tin-plate used in culinary articles showed the presence of an alloy with lead in almost every instance, and often in large quantities. It is safe to assert that a large proportion of the tinned wares in the market are unfit for use on this account.

"That we may not be accused of exciting fears which may be groundless, we will inform our readers how they can settle the question for themselves by a simple and easy test. Put a drop of strong nitric acid on the suspected 'tin,' and rub it over a space as large as a dime. Warm it very gently till it is dry, and then let fall two drops of a solution of iodide of potassium on the spot. If lead is present, it will be shown by a bright yellow color, due to the formation of iodide of lead."

LEADVILLE (COLO.) MINING AND SMELTING NOTES.

Special Correspondence of the Engineering and Mining Journal.

The wages paid to good miners here have steadily kept at $3 a day; foremen, $100 to $125 a month. Surface common labor is paid from $2.25 to $2.50. We have no deep shafts, or, at the most, four over 180 feet deep, so that to my knowledge no hoisting engines are employed. Common men and horse whims do all the hoisting. At hauling ore teamsters load fully 4000 pounds per trip, and their contracts are so made as to give them from $9 to $10 daily gross earning. From Little Pittsburg to Harrison or Grant's smelter they receive $1.75 to $2 a ton. From Adlaide Consolidated Mine to Malta, $2.25 a ton. The roads from all mines, except those located on Iowa Gulch are of continuous downgrade. There are now six furnaces in steady run: Harrison, two furnaces, daily product 10 tons bullion (total), average grade 110 ounces silver. Adlaide No. 1 furnace has met with many interruptions on account of failing of water; when they run, the product is 6 to 8 tons a day, 75 to 100 ounces grade. Grant's No. 1 furnace produces now 7 tons bullion a day, grade 280 to 500 ounces, and has been in continuous run for seven weeks. I consider it by far the best-managed works in camp. A second one is now in course of erection, of a larger capacity, which will increase the capacity of this mill to 15 tons daily. It will be in running order January 10th. Berdell & Witherell turn out from 5 to 6 tons daily, average grade of bullion 325 oz. silver, and ½ oz. gold. Malta, one furnace, is running at present writing and until January 1st on contract Adlaide ore; make 10 tons with it per day. The furnace is of 6 feet by 3 feet section, water-jacketed all around; has a 3 tuyere on the long side and 2 inches at the back to 2½ inches diameter at nozzle. They use charcoal only, and have a burden of one coal to 5½ to 6 ore. When they smelted on their own account, their bullion graded, say, 200 oz.; now the grade is as stated at Adlaide furnace.

Coal is worth, delivered on large contracts. 15c. per bushel. Colorado coke, delivered, $33 per ton. Wood costs $2 a cord. But little iron ore or lime is used, as most of our ores are self-fluxing. B. & W. have bought iron ore last summer, which carries some Ag and Au, not over $5, which cost them $6 per ton, delivered. Van Wagenen has a limestone quarry, and when any is bought, the price is $2.50 per ton.

The tariffs for ores have not changed since summer, and are, of course, even at all mills, though every one has a different method of figuring them. The one given below is that used by Berdell & Witherell:

		Per oz. Cents.
30 oz.	silver and 20 p. c. lead	26·00
40 "	Basis of list, silver, 115 Cy. per oz.	36·00
50 "		44·00
60 "		55·50
70 "	Add 40c. per unit for every unit of lead over 20.	61·50
80 "		65·50
90 "		68·00
100 "		71·50

		Per oz. Cents.
120 oz.	Silver and 40 p. c. lead; add 45c. per unit over 40 p. c. lead, and deduct 80c. per unit under; add a bonus of $10.	90·00
140 "		90·00
160 "		92·50
180 "		95·00
200 "	silver and 40 p. c. lead	96·86
250 "	"	100·86
300 "	Bonus $10, etc., same as from 120 oz. silver.	102·40
350 "		103·90
400 "		105·00

Contract sinking in soft porphyry, down to 60 feet, is worth $5 per foot; in harder rock, from $8 to $10.

Wages at the furnaces are as follows:

Furnace men (keepers)	$3.50
Chargers	3.00@$3.50
Suppliers and helpers	3.00
Common labor	2.25@ 2.50
Carpenters	4.00
Masons and bricklayers	5.00@ 6.00
Engineer	100.00 per mo.

Board for miners costs, on an average, $7 per week; hay, $60 per ton.

The Harrison (St. Louis Sm. Co.) Reduction Works has a similar list out, but I believe, on second thoughts, that the list of Malta for grades under 80 oz. will be more acceptable to you, being less bulky.

They calculate market price of silver, pay 50c. per unit on lead over 20, and deduct $5 mill charges.

The prices paid to smelters for bullion at railroad (Cañon City or Col. Springs) by St. Louis Co. is, for 100 to 125 oz., 10c. per oz. less than market price in New York, and $47 for lead, based at 3½c. per lb. in St. Louis.

While we have heard much of snow-blockades on the trunk lines, our freighting to either terminus has met with no interruption, and our mountain roads are at present writing in a better condition than ever since summer, as the snow and frost have made them solid. B. R.

THE SUTRO TUNNEL AND THE COMSTOCK MINES.

Those who have read the admirably-written account of the Sutro Tunnel in the ENGINEERING AND MINING JOURNAL of November 30th can not fail to have been impressed with the indomitable energy and perseverance displayed by Mr. Adolph Sutro in pushing to successful completion a work indicative of brilliant conceptions of a theoretical mind and a practical man—a somewhat rare coincidence. In spite and in the face of obstacles and opposition which certainly seemed irresistible, and which would have deterred and made other men throw up in disgust, he carried through a project recognized as a delusive idea of an imaginative and speculative brain. It can scarcely fail to have suggested to them, also, the gross injustice of an Act of Congress, authorizing Mr. Sutro to levy an assessment "of $2 per ton of ore extracted from mines drained, benefited, or developed by the tunnel." This, of course, comprises all the mines on the Comstock lode, and above the water-level of the lowest-lying ground belonging to the Sutro Tunnel Company. Can any one believe that a law so unjust should be passed? For what greater injustice can there be than a perpetual tax on all ore sold or milled from a mine a mile or more from the Sutro Tunnel? Does it not follow that, as water will find its level, as fast as one mine is drained, the water in another of less depth will tend to bring it to its former level? Will not that persistent perseverence, so characteristic of the tunnel's promoter, cause him to be detrimental to himself, the shareholders of his project, and the Comstock mines, by involving them in an almost interminable litigation? And though the claim, as by Act of Congress, entitles him to the right of receiving these taxes, are there not hundreds of ways by which a wealthy organization can harass, annoy, and prevaricate? To Mr. Sutro will always belong the honor and glory which both his friends and enemies cheerfully accord him, and it would be more graceful for him now to retire from the active management of what bids fair to be a poor-spirited, "dog in the manger" quarrel, and place in charge other men of sound judgment, unimpeachable character, and good business acquirements, to make arrangements with the several mine and mill owners, the work of whose property, in the way of ventilation, drainage, and carriage the tunnel will greatly facilitate. The managers of these mines are wealthy and powerful, and are not likely to stand in their own light. They would be only too happy to afford to the Sutro Tunnel a remuneration, and a good and ample remuneration, for every ton of ore sent through, every miner transported, and each inch of water drained. By doing this, dividends would speedily be paid and Mr. Suto would exalt himself and add another laurel to his already numerous roll, and increase the admiration of one of many thousand would-be supporters of a now almost worthless stock. By adhering to his unjust and obstinate policy he will make enemies of friends and learn that men who are inclined to be generous will never submit to impositions, great as they are unjust; men who will fight their cause so long as they have a leg to stand on or a dollar to their account. J. Y.

NEVADA, UTAH, AND MONTANA MINES.

Special Correspondence of the Engineering and Mining Journal.

In my trip South, from Salt Lake, I visited Eureka, White Pine, Pioche, Pahsanagat, and Tem Pahute, Nevada, and Silver Reef (the sandstone camp), Utah.

At Eureka, the Eureka Company was running in good shape. The Richmond Company's new furnaces were nearly done. No other company here was doing any good.

White Pine is nearly deserted. All the mills are shut. At Robinson, the Selby Copper Company was making a small run, but ores are scarce. At Ward, the Martin White Company is doing pretty well.

The Raymond and Ely mine, at Pioche, is looking very promising again. The resumption of dividends by this company is among the possibilities, and I think very probable. The new development is on the tenth level, and two thousand feet west of the main shaft. The winze, eleven hundred feet west of the main shaft, on the twelve-hundred-foot level, is down two hundred and forty feet (the deepest working in the mine). Cross-cuts, now being run, will soon tell the story at this depth.

All the other companies at Pioche are idle.

A few small mines are working near Hiko, shipping their ore to Bullionville for reduction.

Of Tem Pahute I will write you another time. From Pioche I went across the Silver Reef, Utah, the celebrated sandstone-ore district. This district is a real curiosity in the mining way, and will well repay the visit to any one who takes an interest in such things. The mines are numerous and some of them very good, the most prominent just now being the "Walker and Barbee," and the Stormont Company's mine, the "Last Chance." These two mines have enormous amounts of ore in sight, and must soon gladden the pockets of their owners with large dividends. The ores are very free chlorides, and so easy to crush that a five-stamp mill works from twenty-five to thirty-five tons per day. It is the cheapest ore to mine and reduce in the world.

The future of Silver Reef, I think, is very bright, there being many prospects that I believe a little work will develop into good paying mines. If I was not so deeply interested in another place, I would remove to the Reef at once.

I did not stop to see the Horn-silver mine at Frisco, on my way up to Salt Lake. Jay Cooke and his party had just been there on a $5,000,000 lay-out, and as that amount oversizes my pile a few ducats, I had not the cheek to go near the mine.

At Salt Lake, times were very dull, owing to all the smelters being closed.

The Ontario, being full of water, I did not visit it. I have a great desire to go all through this mine, for I believe it to be the *best mine* in America *to-day*.

The Stewart mine (gold) in Bingham, is making quite a stir, and will probably continue to do so until they reach the iron pyrites which come in in depth in *every* mine in Bingham Cañon. I would like to know what is under all this *iron?*

In Montana, I find the Hecla Consolidated, at Glendale, having made a very successful run for the season. The gross product of this company will reach very close to one million dollars.

Butte still grows apace. Mills and mines all busy and turning out plenty of bullion and rich shipping ore. The prospect for next season is very bright. I believe Butte will prove to be a second Virginia City.

The Penobscot is very quiet. Will endeavor to get you some reliable information in regard to it very soon. Most likely will visit the mine.

At Phillipsburg I find the Northwestern Co. running in good shape and shipping bullion freely. The mine never looked as well as at present.

The Hope Company's mill is closed, the mine unfortunately not being in bonanza.

A very valuable strike has been made in the Salmon mine by Murray and Durfee's tunnel at a depth of 300 feet. The ore is twelve feet wide, and the grade of it very good—100 ounces or more. It is very base (zinc and lead), but can be worked to a high percentage in the "Howell-White" furnace.

I will write you some other day about the Algonquin, the best mine in the camp.

Am glad to see the Silver Islet come to the front again in good shape.

The *resurrection* of every *dead celebrated* mine helps our business wonderfully.

You are doing well in "*going* for" the Comstock style of mining. Keep at it.

I have a *prospectus* for you, the reading of which is better than a *circus*.

K. K.

ELECTRIC BREVITIES.

PORTABLE ELECTRIC LAMP.—A portable electric lamp is claimed to have been invented by Mr. Fuller, of Brooklyn.

ELECTRIC LIGHTING OF RAILWAY STATIONS.—A portion of the London terminus of the Great Eastern Railway is to be illuminated by six electric lights, in connection with the Farmer-Wallace machine.

ELECTRIC LAMPS.—At a meeting of the Society of Arts, Mr. Preece, electrician of the British Post Office, said that while he found the Serrin lamp to be brilliant, the Werdermann to be steady, and the Wallace to be durable, these necessary properties were not possessed as yet by any one device, and the electric light was not, therefore, used at the General Post Office.

THE ELECTRIC LIGHT IN STEEL WORKS.—The electric light has been applied to the celebrated steel works of M. Krupp, at Essen, Prussia, the lamp used being one patented by M. Krupp. The regularity of the current is maintained by a fan revolving on an axis of mercury; the carbons are arranged vertically one

over the other. Abundant steam-power being available, the electric light is judged to be one third cheaper than gas.

THE ELECTRIC LIGHT AT LIGHT-HOUSES.—The application of the electric light to light-houses will probably be universal in the future, as its rays can be thrown further than those of oil, and the maintenance of the light requires less dependence for constant attention on the attendants. The corporation of Trinity House, London, has led the way in adopting the electric light for guidance or warning to vessels. It shines steadily and brilliantly at South Point, Durham, at South Foreland, at Lizard Point, and elsewhere; and, judging from the number of Lyons's hot-air engines recently ordered by the Trinity Board, is about to be extended.

ESTIMATES OF THE COST OF THE ELECTRIC LIGHT.—The estimates made at the present time of the cost of the electric light under different systems must be considered simply as approximate; yet, on the whole, they show under favorable conditions a saving over gas. It is affirmed that the Gramme machine and Swiss lamp, in operation at the goods station of the Northern of France Railway, and at La Chapelle, Paris, showed an economy over gas of 60 per cent; while at Messrs. Powell's iron work at Rouen, two single M size Gramme machines and two Serrin lamps showed a saving of seventy per cent over gas; two lights, each of an intensity of 1900 candles, costing eight cents an hour. The lamps of Serrin, improved by Lontin, as tried at the Paris terminus of the Paris, Lyons, and Mediterranean Railway, resulted in an average cost, per hour, of $2.04 for twenty-eight lamps, each lamp giving a light equal to eighty gas jets. The Société Generale d'Electricité of Paris has offered to supply the Jablochkoff light to the city at the same cost as gas. In the estimate of cost of the electric light, based on mere experiments, certain items are apt to be overlooked, but the general prospect is a cheerful one. The cost of the electric light of the future will probably show a great saving over gas, and it will be infinitely better.

GENERAL MINING NEWS.

CALIFORNIA.

THE IDAHO GOLD MINING COMPANY—(ANNUAL REPORT).

From the *Foothill Weekly Tidings*, of December 21st, we condense from a very full and satisfactory report of this company's operations during the past year, the following. The Superintendent says: "We are now working 50 stamps, and the condition of the mine is such as to lead us to expect as favorable a result in the next few years as we have had in the last year or two; and as all our machinery is in good order and of sufficient capacity, I see no reason to expect any further outlay, in either improvements or maintaining our present capacity, other than the usual wear and tear, and the legitimate milling and mining expenses.

"We have no ore above the 600 level, and but very little above the 700 level. The 800 level is in 720 feet from the shaft, and the backs are worked through to the 700 level 411 feet from the shaft. The ledge in these stopes has been and is now quite small and the ore not up to an average in quality. The 900-foot level is in 824 feet from the shaft, and the stopes worked through to the 800-foot level, 365 feet from the shaft. The ledge in the 900 drift and stopes has also been quite small and disturbed, but it is getting more settled in the drift now. The quality of ore in drift and stopes is of an average quality. The 800 west stopes are nearly exhausted, and with this all west of the shaft will be finished, and all the mine lay east of the shaft. The 1000-foot level is in 651 ft. from the shaft. The first 300 feet from the shaft is in barren ground, and the stopes are worked through to the 900 level 210 from the shaft. The ledge in this drift and the stopes averages well both for size and quality. As the pay chutes seem to have a steady pitch east, and it being seen that in every level below this point we should have an increased distance to drive in barren ground to reach the pay chute from the main shaft, it was decided to sink an incline commencing at the 1000-foot level to work the mine below this point. This incline is located 312 feet from the main shaft, and is being sunk on the pitch of the pay chute which dips at an angle of about 40 degrees east. The incline is down 105 feet below the 1000 level. The ore is of low grade, but this was to be expected, as it was the intention to carry it down just on the point of the pay chute. The rock from the incline is hoisted to the 1000-foot level with a ten-inch engine driven by compressed air, and as we expect to do a large amount of work through the incline, it is being carried down large enough for a double track as well as for a pump.

"During the year we have crushed 33,833 tons of ore, of which 1821 tons came from the 600 level, 3118 tons from the 700 level, 5822 tons from the 800 level, 9004 tons from the 900 level, and 14,068 tons from the 1000 level. This gave a yield of

32,542·62 oz. of bullion, value	$572,136.03
Sold 72½ tons slime	1,882.65
Sold 18 tons tailing sulphurets	1,820.27
Sold 111½ tons buddle sulph'ts	7,109.50
Estimated from working sulphurets and slime sold	3,030.00
From tailings worked on shares	7,707.88
From specimens	141.00
Total	$593,830.33

"Giving an average of $17.55 per ton.

MILL, MINING, AND REPAIRING.

Surface labor	$53,098.52	Quicksilver	$1,307.25
Underground labor	123,618.07	Repairing ditch	3,551.21
Wood and poles	30,952.85	Two new ropes	2,746.93
Hardware	7,068.91	New cylinder on mill engine	1,600.00
Drill steel	1,525.77	National and Ingersoll drills	3,458.55
Powder and fuse	9,986.83	Superintendent's salary	6,000.00
Candles and oil	5,967.48	Sundries	4,537.77
Lumber	2,281.51		
Foundry	10,051.43	Total	$270,470.99
Coal	2,717.90		

"Average cost per ton, $7.99½.

"This company has paid twelve monthly dividends during the year, aggregating $263,500, equal to 85 per cent of the whole capital stock.

"The receipts of this company from all sources for the fiscal years given, were as under:

1869	$306,038.75	1875	$509,430.72
1870	183,450.23	1876	573,928.31
1871	407,301.16	1877	525,435.09
1872	404,035.52	1878	609,449.18
1873	1,010,612.20		
1874	669,023,03	Total receipts for 10 years	$5,198,704.19

"There has been paid out in dividends to stockholders, during this period, as follows:

1869, 11 dividends aggregating 55 per cent	$170,500	1874, 12 dividends aggregating 102½ per cent	$317,750
1870, 7 dividends aggregating 12 per cent	37,200	1875, 11 dividends aggregating 55½ per cent	172,050
1871, 12 dividends aggregating 75 per cent	232,500	1876, 12 dividends aggregating 82½ per cent	255,750
1872, 11 dividends aggregating 52½ per cent	162,750	1877, 12 dividends aggregating 77½ per cent	240,250
1873, 12 dividends aggregating 220 per cent	682,000	1878, 12 dividends aggregating 85 per cent	263,500

"Being, for ten years, 112 dividends, aggregating 817½ per cent on the capital stock, and amounting to $2,534,250."

NEVADA.

THE COMSTOCK.

From the mining summary in the *Gold Hill News* of December 26th, we condense the following regarding the prominent operations on the Comstock:

"Preparations are now under way for opening new levels in the Ophir, Sierra Nevada, Belcher, Yellow Jacket, and Crown Point mines, which can hardly be completed in less than three or four months to come.

"All along the line of the Comstock preparations for prospecting the vein at still greater depths are being made. The old machinery of the hoisting works of six, eight, and ten years ago, calculated to prospect the lode to a depth of 1000, 1500, and 2000 feet, is being torn out and replaced by new and improved kinds, intended to reach a depth of from 2500 to 5000 feet.

"At the 2200 level of the Ophir a station has just been completed and a cross-cut started to prospect the ore vein.

"At the North Consolidated Virginia shaft immense preparations are being made, and immense machinery being put in, both for hoisting and pumping.

"The pumps in the new shaft of the Gould and Curry will be ready to start up in a day or two more, when it is confidently believed they will make short work of the pocket of water recently struck. Inside of three weeks more the big east drift to connect with the Hale and Norcross and Combination shafts will have been completed, when preparations can be commenced to empty the floods of the Hale and Norcross and Savage mines into the great drain of the Sutro Tunnel.

"The Belcher has commenced opening the 2560 station, and will soon be ready to prosecute the development of the mine on that level.

"A day or two since a strong flow of water was struck in the north drift on the 2400 level of the Exchequer and Bullion, causing the stoppage of the drift, as there was danger of flooding the Imperial mine on that level.

"The bonanzas continue their usual yield of good ore. Justice is running the Pappoose mill, the Ophir the Brunswick, and the Trojan the Vivian mill, on the Carson River."

NEW PATENTS.

The following is a list of the new inventions relating to Iron, Coal, Mining Machinery, Chemical Apparatus, and the treating of Precious Metals, etc., from *The Official Gazette of the United States Patent Office*, for the week ending November 26th, 1878:

No. of Patent.	*Title of Invention.*	*Name of Inventor.*	*Residence.*
210,179	Steam-Gauge	Richard C. Blake (a)	Hamilton, O.
210,184	Current Water-Wheel	W. W. Cleveland	Marshall, Mich.
210,197	Blasting-Powder	P. M. Gallaher	Danville, Pa.
210,213	Carbon Regulator for Electric Light	James H. Rogers	Washington, D. C.
210,216	Railway-Switch	George H. Soule (b)	Bangor, Me.
210,226	Device for Regulating the Flow of Gas	Eugene Tourne	New Orleans, La.
210,244	Railroad Track	E. R. Dingley	New York, N. Y.
210,245	Electric Gas-Lighting Apparatus	W. E. Facer	Cleveland, O.
210,252	Metal-Testing Machine	John R. Grout	Detroit, Mich.
210,261	Water-Gauge for Steam-Boilers	Erastus B. Kunkle	Fort Wayne, Ind.
210,279	Valve-Seat for Steam-Cylinders	Henry Watkeys	Syracuse, N. Y.
210,298	Water-Wheel	Alfred G. Cline	Crete, Neb.
210,301	Well-Auger	James Curley	Henning, Tenn.
210,304	Manufacture of Fuel from Carbonaceous Powders, etc	Cyprien T. Du Motay	Paris, France.
210,316	Electric Meter for Measuring the Current of Electricity	J. B. Fuller	Brooklyn, N. Y.
210,317	Inducting Apparatus for Lighting by Electricity	" "	" "
210,324	Iron Tank for Holding Petroleum	Eli E. Hendrick	Carbondale, Pa.
210,328	Steam-Meter	Carlos Holby	Lockport, Pa.
210,348	Engraving-Machine	James F. McNally	Washington, D. C.
210,352	Governing and Recording Apparatus for Gas	David B. Peebles	Edinburgh, Scotland.
210,353	Valve-Gear for Steam-Engine	Benjamin P. Perry	Richmond, Ind.
210,360	Mill for Pulverizing Ores	Joseph W. V. Rawlins	Houghton, Mich.
210,369	Metallurgic Furnace	William Swindell	Allegheny, Pa.
210,378	Rotary Water-Meters	Thomas Walsh	Montreal, Canada.
210,380	Electric Lights	Edward Weston (c)	Newark, N. J.

(a) Assignor to the Blake Steam-Gauge Co., same place
(b) " ½ his right to Clark Soule, same place.
(c) " to Weston Dynamo-Electric Machine Co., same place.

DAMAGES IN PATENT SUITS.—A strong movement is being made in Congress to amend the patent law so as to provide that no recovery of damages or cost shall be had against the defendant in any suit for infringement, if it shall appear that he purchased the patented article for his own private use, from a manufacturer or dealer engaged in the open sale of the same, the defendant being without knowledge or actual notice of the existence of the patent. This amendment, if adopted, would destroy, in a very great degree, the protection now given to inventors by the patent laws. If the patentee of an article was obliged to resort for damages in case of infringement to the manufacturer, he would in most cases be unable to obtain redress, for those who manufacture and sell patented articles without right to do so are as a rule irresponsible. To require the purchaser of a new contrivance for facilitating labor to examine whether the same is patented or not is imposing but a slight burden, and in case the same is an infringement, and is used, there is not one instance in a thousand where the patentee demands more than a trifling royalty.—*Albany Law Journal.*

PROPOSALS.

For the benefit of many of our readers, we compile weekly such proposals and solicitations for contracts, etc., as may be of interest. The table indicates the character of proposals wanted, the full name and address of parties soliciting, and the latest date at which they will be received:

Bridge; Howe Truss, Iron, 650 feet long; Board of Supervisors, Wapello, Wisconsin	Jan. 6, 1879.
Illuminating Gas; Buildings and Machinery necessary to supply fixed; O. W. Nash	" "
100,000 gallons Best Quality, Winter-Strained, Pure Lard Oil for U. S. Light-House Service. John Rodgers, Rear Admiral U. S. Navy, Washington, D. C.	" 8, "
Dredging at Rock Island Rapids, Ill.; F. U. Farquhar, Major of Engineers, Rock Island, Ill	" 22, "
Gas Illumination of Rio de Janeiro, Brazil; Salvador de Mendonca, Brazilian Consul-General, 42 Broadway, New York City	March, "
Locks and Keys for Mail Bags; D. M. Key, Postmaster-General, Washington, D. C.	" 20, "
Coal for Schools of Youngstown Board of Education, Youngstown, O	" 29, "

Opening of Proposals for U. S. Army Wagons ran as follows: Concord Wagon Co., $125 each; Jacob Sebastian, of New York, $90 each; Kessler Wagon Co., of Philadelphia, $95 each; Jacob Rech, of Philadelphia, $115 each; Wilson, Childs & Co., of Philadelphia, $83 each.

The Joint Committee on Public Buildings opened proposals for the new gas machine for the Insane Asylum at Evanston Dec. 31. The following bids were received: James Durham, $3000; Matthews & Holt, $1750; De Gurgnan & Beers, $6450; Combination Gas Machine Co., of Detroit, $2450: Fred Hainsworth, $950; G. Springer, $1480; Adolph Hirsch, $4000.

Water-Works for Woodbury.—A committee of the City Council and Messrs. H. P. M. Birkinbine and J. M. Yocum recently made a thorough investigation as to the sources of supply and best method of securing to the city of Woodbury a proper and efficient system of water-works, the cost to be about $30,000.

Proposed Railway Extension in New South Wales.—SAN FRANCISCO, Jan. 2.—The steamship Australia, Captain Cargill, brings news from Australia to December 8th: The Minister of Public Works has recommended extensions of the railways of the colony of New South Wales, which would increase them by 1000 miles.

STATISTICS OF COAL PRODUCTION.

This is the only Report published that gives full and accurate returns of the production of our Anthracite mines.

Comparative statement for the week ending Dec. 28th and years from January 1st :

TONS OF 2240 LBS.	1878. Week.	1878. Year.	1877. Week.	1877. Year.
Wyoming Region.				
D. & H. Canal Co..	†60,333	2,137,202	67,631	1,929,248
D. L. & W. RR. Co.	39,752	2,147,358	60,090	2,057,524
Penn. Coal Co.....	‡.....	905,662	34,506	1,064,583
L. V. RR. Co.....	8,508	828,381	27,704	917,037
P. & N. Y. RR. Co..	.....	31,186	227	42,618
C. RR. of N. J.....	27,078	993,189	‡.....	1,340,831
Penn. Canal Co....	*.....	347,599	.....	340,231
	135,671	7,390,577	190,161	7,692,082
Lehigh Region.				
L. V. RR. Co.....	22,228	2,415,490	57,605	3,355,035
C. RR. of N. J.....	24,235	1,332,532	‡.....	1,506,017
S. H. & W. B. RR..	813	38,277	‡.....	34,473
	47,276	3,806,299	57,605	4,895,525
Schuylkill Region.				
P. & R. RR. Co	73,368	5,083,937	112,296	6,834,195
Shamokin & Lykens Val....	18,822	813,158	‡.....	691,342
	92,190	5,897,095	112,296	7,525,537
Sullivan Region.				
Sul. & Erie RR. Co.	517	36,744	595	21,605
Total	275,654	17,127,681	360,657	20,134,739
Increase.....	.....	.....	.....	.....
Decrease	.....	.....	.....	.....

* Canal closed. † Nine days ending December 31st.
‡ These reports were not received
The above table does not include the amount of coal consumed and sold at the mines, which is about five per cent of the whole production.

Shipments of Anthracite Coal during week ending December 21st, 1878, and total for year to date, compared with corresponding time last year, as prepared by Mr. John H. Jones, Accountant of the Anthracite Board of Control.

INTERESTS.	Week. Tons.	Week. Cwt.	Total for year to date. Tons.	Total for year to date. Cwt.
Philadelphia & Reading R.R.	110,040	1	4,977,326	12
Lehigh Valley R.R.....	59,384	1	3,348,616	1
Central R.R. of N. J.....	56,757	5	2,178,853	14
Del., Lack. & West. R.R....	43,762	10	2,118,998	16
Del. & Hudson Canal	50,148	16	1,985,327	15
Pennsylvania R.R	19,912	11	1,326,398	9
Pennsylvania Coal Co.....	21,582	9	932,173	1
Total.....	361,587	13	16,867,694	8

INTERESTS.	Corresponding time last year. Tons.	Corresponding time last year. Cwt.	Difference. Tons.	Difference. Cwt.
Phila. & Reading R.R..	6,709,600	10	D. 1,732,273	18
Lehigh Valley R.R.....	4,396,143	10	D. 1,047,527	9
Central R.R. of N. J....	2,728,644	7	D. 549,790	13
Del., Lack. & West. R.R	2,054,717	3	L. 64,281	13
Del. & Hudson Canal....	1,874,002	0	L. 111,325	15
Pennsylvania R.R.....	1,497,432	0	D. 171,033	11
Pennsylvania Coal Co...	1,083,011	0	D. 150,837	19
Total.....	20,343,550	10	D. 3,475,856	2

NOTE.—The tonnage for the week on this statement is approximated from the weekly returns of the transportation companies, and is subject to adjustment each month to conform to the returns made by each interest to the Board of Control

Coals Cleared on the Canals of the State of New York from the opening to the closing of navigation, in tons of 2000 lbs. :

	1878. Tons.	1877. Tons.	Decrease. 1878. Tons.
Anthracite.....	681,400	1,015,239	333,839
Bituminous.....	207,319	257,642	50,313

Coal Creek Mines, Colorado.—Shipments for week ending Dec. 21st, 1685 tons.

The increase of shipments of Cumberland Coal over the Cumberland Branch, and Cumberland and Pennsylvania railroads amounts to 101,094 tons, as compared with the corresponding period in 1877.

Receipts and shipments of coal at Chicago Ill., for the nine days ending Dec. 21st, and year from January 1st :

	Nine days. Tons.	Year. 1878. Tons.	Year. 1877. Tons.
Receipts.....	27,609	1,817,812	1,749,091
Shipments.....	4,401	296,923	271,176

Perth Amboy Business:	Tons.
Received for the week	8,582
Shipped for the week.....	11,758
On hand Dec. 28th.....	108,348

The Production of Bituminous Coal for the week ending Dec. 28th was as follows:
Tons of 2000 lbs., unless otherwise designated.

	Week. Tons.	Year. Tons.
Cumberland Region, Md.		
Tons of 2,240 lb.....	†16,807	1,033,824
Barclay Region, Pa.		
Barclay R. R., tons of 2,240 lbs.....	6,495	305,915
Broad Top Region, Pa.		
Huntingdon and Broad Top R. R.....	†3,037	150,223
*East Broad Top.....	1,315	61,048
Clearfield Region, Pa.		
*Snow Shoe.....	491	27,791
*Tyrone and Clearfield.....	26,855	1,219,251
Allegheny Region, Pa.		
*Pennsylvania R. R	2,732	193,515
Pittsburg Region, Pa.		
*West Penn R. R.....	3,046	177,636
*Southwest Penn. R. R..... .	461	22,903
*Penn & Westmoreland gas coal, Pa. R. R..... 17,455		659,808
*Pennsylvania R. R.....	7,773	411,893

*For the week ending Dec. 14th.
† Nine days ending December 31st.

The Production of Coke for the week ending Dec. 14th :

Tons of 2000 lbs.	Week.	Year.
West Penn. R. R....	2,491	83,310
Southwest Penn. R. R.....15,773		756,151
Penn. & Westmoreland Region, Pa. R. R.	1,934	74,644
Pittsburg, Penn. R. R.....	2,829	112,074
Penn. R. R. (Allegheny Region).....	1,408	2,490
Total... ... .24,435		1,028,669

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Jan. 3, 1879.

Anthracite.

For the time of the year there has been a very fair business done during the week under review. Dealers and manufacturers have been busy taking account of stock and closing books, and have not purchased except to supply actual necessities. The consumption, especially for domestic purposes, has, however, been going on at a rate very satisfactory to dealers and producers, and a good demand is looked for during this month. This is so firmly believed in that in connection with the falling off of production by individual operators, prices are firmer than before the meeting at which the combination was permitted to expire. Prices now are within 5 or 10c. of those announced in circulars.

The Philadelphia and Reading RR. Co. has made arrangements to ship coal over the Bound Brook and New Jersey Central railroads to Elizabethport during the time navigation is closed at Philadelphia. It is thought that about 1500 tons per day will reach the New York market by this route. An outlet at South Amboy for coal shipped over the Pennsylvania RR. also exists for this coal.

The company expects to do a larger business during the early months of this year than in any previous one, and its announced rates of freight from the mines to tide water of 40 per cent of the selling price of coal, to Port Richmond, and 50 per cent to Elizabethport and Amboy, will certainly bring it an immense business.

The announcement of the failure of Bennett, Phelps & Co., of Wilkes-Barre, one of the most prominent banking firms in Pennsylvania, opens the year with a cloud that causes considerable uneasiness in the coal trade, especially as with it is announced the embarrassment of several coal operations. The firm makes the following statement :

"We regret to announce the necessity of suspending business, and have closed our doors. The necessity was not suspected until last night, and is caused by the present inability of the Forty Fort Coal Company, the Riverside Coal Company, J. H. Swoyer, and others, to meet their obligations. The firm has made an assignment of the firm's property, and each of the partners has made an assignment of his separate estate, for the benefit of the firm's creditors, to the Miner's Savings Bank. The estate of our late senior partner, Ziba Bennett, is very large and entirely unencumbered, and is liable for any deficiency : and we feel confident that our creditors will be paid in full without great delay."

Mr. Swoyer, who is identified with all the companies mentioned by Bennett, Phelps & Co., is one of the most popular gentlemen in the coal trade, and there is the greatest sympathy expressed for him. He has been one of the most active advocates of combination.

Messrs. Charles Parrish & Co., of Wilkes-Barre, realizing the necessity of a reduced cost of production, made a reduction yesterday of 10 per cent on miners' wages. To this their employés objected, and refused to work at the wages offered. The men and boys at the Richmond colliery of the Philadelphia and Reading Coal and Iron Company have stopped work because they were not paid promptly.

As announced in our editorial pages we shall hereafter publish a monthly supplement to the ENGINEERING AND MINING JOURNAL, in which we shall give very full quotations of coal and iron at all the leading markets of the couutry, with full lists of freights and such other general information as is of value to miners, shippers and consumers of coal, and producers and consumers of iron. Our reason for this is that our limited space does not permit us to publish each week all of this information we desire, and some of that which we do publish so seldom needs revision as to make its weekly issue unnecessary. We shall continue our regular reviews of the markets, and in these shall note any change that may occur previous to the publication of the supplement.

In the usual tables omitted from this number of the JOURNAL there are no changes to note. This new feature will enable us to devote more space to the important coal and iron interests, and will make the JOURNAL still more useful than heretofore to those engaged in them.

Bituminous.

As is usual at the closing of one year and the opening of another, there has been nothing worthy of note in the bituminous coal trade. Our annual review of the coal trade, which is published elsewhere in this number, deals with the statistics, etc., and covers all points of intereet.

New York.

Wholesale Prices of Anthracite Coal Delivery f. o. b. at Tide Water Shipping Ports, per ton of 2240 lbs.

	Lump. $	Steamer. $	Grate. $	Egg. $	Stove. $	Chestnut. $
WYOMING COAL.						
‡Lackawana, at Weehawken						
*Pittston, at Weehawken...	2 60	2 60	2 70	2 85	3 20	2 60
L. Val. Coal Co., at Amboy.	2 60	2 60	2 70	2 85	3 20	2 60
Wilkes-Barre at Pt. Johnson	2 60	2 60	2 70	2 85	3 20	2 60
Plymouth Red Ash at Port Johnson.....			2 70	2 85	3 30	2 60
Swoyers at Eliz. Pt. or S. A.	2 60	2 60	2 60	2 75	3 20	2 60
LEHIGH COAL.						
Spring Mount. Lehigh, at P. Amboy.....	3 25	...	3 00	3 00	3 20	2 60
Cross Creek, at Port John.	3 00	3 00	3 00	3 00	3 20	2 60
Buck Mount. Vein at Elizabeth Port or S. A.....	3 50	3 00	3 00	3 00	3 20	2 60
Mount Pleasant at Hoboken	3 75	.....	3 25	3 25	3 25	2 75
Hazleton at Hoboken..... ..	3 75	.....	3 25	3 25	3 25	2 75

* Forty cents per ton additional for delivery in New York.
† On coal delivered f. o. b. at the Philadelphia and Reading Coal and Iron Co.'s Wharf at Williamsburg, the current rate of harbor freight will be allowed from the prices here given.

Wholesale Prices of Bituminous Coal.

DOMESTIC GAS COALS.

Per ton of 2240 lb.	At the Shipping Ports.	Alongside at New York.
Westmoreland and Penn.....	$4.25	.....
At Greenwich, Philadelphia		$5.50
At S. Amboy.	5.00	5 50
Kanawha at Richmond	4.10	5.40
Red Bank Cannel, Pa., at Philadelphia..	8.00	8.50
Youghiogheny, Waverly Co., at Balt ...	4.00	5.65
Despard, West Va.....	4.50	6.00
Murphy Run, West Va., at Baltimore. ..	3.75	5.85
Fairmount, West Va., " " ...	3 75	5.70
Newburg Orrel. Md. " " ...	3.75	6.00
Cannelton Cannel, West Va		10.00
" Splint " at Richmond.	6.00	7.00
" Gas Coal at Richmond	4.00	5.65
Peytona Cannel, W. Va., at Richmond...		10.00

MANUFACTURING AND STEAM COALS.

Cumberland at Georgetown and Alexandria	2.75@2.90	4.35@4.50
Cumberland, at Baltimore.....	2.90@3.00	4.35@4.50
Cl'rfi'd "Eureka" and "Franklin."		
At mines.....	0.75	....
At Baltimore.....	3.25	4.50
At Philadelphia.....	3.25	4.50

FOREIGN GAS COALS.

	Sterling.	Am. cur'ncy
Newcastle, at Newcastle-on-Tyne.....	7s.6d.	$2 50@ $3.50
Liv. House Orrel, at Liv.....	25s.	13.00
Ince Hall Cannel " ....,	35s.6d.	18.00
" Gas Cannel "	25s.6d.	10 00@ 10.50
Scotch Gas Cannel, at Glasgow, nominal.....	25s.	7 50
	Gold.	
Bl'k House, at Cow Bay, N.S.	$1.75	$4.50
Caledonia, at Pt. Caledonia.	1.50	4.25
Glace Bay at Glace Bay....	1.50	4.00
Lingan, at Lingan Bay.....	1.50	.....
Intern'l Mines, at Sydney...	1.75	4.50
Pictou, Vale Mines, at Pictou	2.00	4.70

Philadelphia, Jan. 2, 1879.

The rates of tolls on shipments from Port Richmond and Port Johnson for Schuylkill coals begin low, and if they so continue, the output of the Schuylkill region must be very large. The rates are at Port Richmond 40 per cent of the price on board and at Port Johnson 50 per cent of the same. The new feature is that this rate applies to transportation from the Breaker, instead of Schuylkill Haven as formerly. The circulars announcing this will be out in a day or two. The rates to the city is reduced 25 cents and on the line proportionally to all points from Monday next.

There is a good deal of ice in the river, and no rate of freight can be quoted to be depended upon. It would take much more than any purchaser will pay to coax a captain to load here at present and at such rate as could not compare with one obtainable in New York.

San Francisco.

SAN FRANCISCO, December 26, 1878.—The continued cold weather, which is quite remarkable for us on the Pacific slope, is the occasion of considerable increase in the household demand for the better grades of bituminous, and this increased local requirement is quite observable in the large demand for Wellington, Seattle, and other North Pacific Coals, and which demand takes all that arrives, and just as fast as it can be taken from ship's sides, the range being from $7 to $10. The stock of West Hartley, Scotch Splint, Wallsend and other favorite coals is very light for

the season. Shipments *en route* from New South Wales, England, and Scotland are very insignificant as compared with years past, and the result is now apparent in the increased price now offered for cargoes of approved quality to arrive. The receipts of Steam from the California Mt. Diablo mines and of Screenings from the Seattle mines tend to keep down prices of the commoner kinds, while Anthracite to a great extent is ignored, and dealers well stocked with Lehigh, Cumberland, etc. The arrivals during the week embrace the following: From Coos Bay, the Premier, with 400 tons; Empire, 700 tons Wellington; Marmion, 1275 tons same; Gem of the Ocean, 1030 tons Seattle Screenings; Revere, 1100 tons Wellington; Br ship Ellerbank, 1400 tons Wallsend, from Newcastle, New South Wales; Gussie Telfair, 250 tons Coos Bay; Alaska, from Seattle, had 2010 tons; P. J. Carleton, from Nanaimo, had 1500 tons; Earl Dalhousie, 1400 tons Wellington; Modoc, 610 tons Seattle.—*Commercial Herald.*

FREIGHTS.

Coastwise Freights.

Per ton of 2240 lbs.

Representing the latest actual charters to Jan. 2d, 1879.

PORTS.	From Philadelphia.	From Baltimore.	From Elizabethport, Port Johnson, South Amboy, Hoboken and Weehawken.
Alexandria	97½@1.00	.....	.....
Albany	.....	.....	.....
Allyn's Point	1.30	.....	75
Annapolis	60	.....	.....
Baltimore	50	.....	.....
Bangor, Me	.....	.....	1.50
Barnstable	.....	.....	.....
Bath, Me	.....	.....	.....
Boston, Mass	1.40@1.50	1.75	1.25
Braintree	.....	.....	.....
Bridgeport, Conn.	.....	1.45	65
Bristol, R. I.	1.30	.....	75
Brooklyn	85	.....	.....
Camden, Me	.....	.....	1.30
Cambridge, Mass.	.....	.....	1.50
Charleston	1.10@1.25	.....	.....
Chelsea	.....	.....	.....
Charlestown	.....	.....	1.50
Cambridgeport	.....	.....	1.50
Danversport	.....	.....	1.75
East Cambridge	.....	.....	1.50
East Boston	.....	.....	1.25
Eliz'b'th City, N.C	.....	.....	.....
Fall River	.....	1.50	90
Georgetown	.....	.....	.....
Gloucester	1.80	.....	.....
Hackensack	.....	.....	.....
Halifax	.....	.....	1.50
Hampton, Va	.....	.....	90
Hartford	.....	2.00	.....
Hingham	.....	.....	1.50†
Hoboken	.....	1.10	.....
Hudson	.....	.....	.....
Hunter's Point	85	.....	.....
Jersey City	.....	1.10	.....
Key West	2.50	.....	.....
Lynn	.....	.....	1.50†
Marblehead	.....	.....	.....
Middletown	.....	.....	.....
Newbern	.....	.....	.....
New Bedford	.....	.....	85
Newburyport	.....	2.00	1.50
New Haven	1.05†	1.45	65
New London	.....	1.45	70
Newport	1.30	.....	75
New Rochelle	.....	.....	.....
New York	85@95	1.30	.....
Newark	.....	1.40	.....
Norfolk, Va	65	.....	.....
Norwich	.....	1.50	80@90
Norwalk, Conn	.....	1.40	.....
Pawtucket	.....	.....	1.00
Petersburg	.....	.....	.....
Philadelphia	.....	60	.....
Port Eades	.....	.....	2.50
Port Royal	.....	.....	.....
Portland	.....	1.80	1.15
Portsmouth, Va.	70	.....	.....
Portsmouth, N.H.	1.55	1.85	1.50
Providence	.....	1.50	80
Richmond, Va	85	.....	80
Saco	.....	.....	2.00
Sag Harbor	.....	.....	.....
Salem, Mass	.....	1.80	1.25
Savannah	1.25	.....	.....
Somerset	.....	.....	75
St. John, N. B.	.....	.....	1.00
Trenton	.....	1.25	.....
Troy	.....	.....	70
Wareham	.....	1.60	.....
Washington	.....	.....	.....
Williamsburg	.....	.....	.....
W'lmington, Del.	.....	60	.....

* And discharging and towing. † And discharging. ‡ And towing. § 3 cents per bridge extra.

Alexandria and Georgetown to Boston, 1.85@2.00.

Perth Amboy to Boston, 1.25.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Jan. 3, 1879.

American Pig.—As was expected would be the case, in the absence of speculation, there has been no business worthy of notice. Prices are nominally unchanged. We quote: No. 1 foundry at $16@$18; No. 2 foundry, $15@$17, and forge, $14@$15.

Scotch Pig.—There has been no important business done since our last. We quote: Coltness at $22 @$22.50 and Eglinton, $19.50@$20.

Rails.—A sale of 5000 tons of steel rails is reported, and a very large inquiry still exists. We continue to quote steel rails at mills at $41 and iron at $32@$36.

Old Rails have been without transactions, and are quoted nominally at $18.50@$19.50.

Wrought Scrap, without business, is quoted at $22.

Ocean Freights.

Ocean Freights on coal, iron, etc., per ton of 2000 lbs. to and from foreign and domestic ports, for four weeks ending Dec. 31st, 1878, are given below.

DATE.	From	To	Cargo.	R'te
Dec. 3	New Haven	Philadelphia	Rails	1.50
" 3	Elizabethport	Richmond	Pig-iron	80
" 6	New York	Bremen	Salt	25s.
" 6	Perth Amboy	Port Royal	RR. iron	1.85
" 6	New York	Richmond	Iron ore	1.00
" 7	Philadelphia	St. Thomas	Coal	2.65
" 7	Philadelphia	Havana	.....	1.50
" 13	Woods' Hole	Pensacola	Guano	1.60
" 13	Baltimore	Acapulco	Coal	8.50
" 17	Boston	San Francisco	Iron	†
" 19	San Francisco	Unit'd Kingd'm	Iron	40s.
" 21	Philadelphia	Matanzas	Iron	4.00
" 24	Trapani	Boston	Salt	9s.
" 24	New York	Port Royal	RR. iron	1.75
" 24	New York	Richmond	*	90
" 24	New York	Boston	Pig-iron	1.50
" 27	Sidney, C. B.	St. Jago	Coal	3.75
" 27	Lingan	Cardenas	Coal	3.50
" 27	Barren Island	Savannah	‡	1.75

* Steel rails. † $10@$12. ‡ Phosphate.

METALS

NEW YORK, Friday Evening, Jan. 3, 1879.

In finishing the holiday week, and afterward giving attention to the closing of books for the year that has ended, but little attention has been given to buying and selling, and we are compelled to record a very quiet week's business. As the dealers become familiar with the statistics of consumption during 1878, they become greatly encouraged in the belief that the worst has passed, and that 1879 will mark the beginning of an era of great prosperity.

Gold Coin.—As gold has ruled steadily at par during the past week, and resumption appears to be a success, we shall discontinue our reports upon this article, with the hopes that hereafter there will be no necessity for them.

Copper is without business, and quite nominal at 16c. per lb. for Lake.

The exports of copper from New York during 1878 were as follows:

	Lbs.
Liverpool	12,107
London	466,951
Hull	20,927
Havre	8,824,589
Hamburg	3,267,622
Antwerp	50,000
Bremen	160,280
Amsterdam	133,750
Rotterdam	105,200
Hong Kong	68,231
	13,109,657

From London, under date of December 17th, we have received the following:

"Private messages from Chili give the charters for the past fortnight, as only 1200 tons, of which 950 tons in bars, 200 tons in ores and regulus for England, and 50 tons bars for the Continent.

SHIPMENTS.

	1878. Tons.	1877. Tons.	1876. Tons.	1875. Tons.
Jan. 1 to Nov. 30	44,063	40,271	47,050	44,040
November only	5,100	3,350	4,420	4,095

"There is still a fair trade doing in bars in this market, and we note further sales of 25 tons G. O. Bs. at £57½, with 150 tons favorite marks at £58, cash. At these prices the supply of metal is getting rather limited, and purchases of about 200 tons would apparently be sufficient to clear the holders of all they seem disposed to sell at such figures. Best marks are quoted £58½@£59, and but small quantities obtainable thereat. Australian is neglected; Wallaroo nominally £68, and Burra £65½. We think that offers at 10s. below these rates would meet with acceptance."

Under date of Dec. 18th, the following:

"There has been but small inquiry for Chili bars to-day, the late transactions having apparently been sufficient to satisfy the more pressing demands. We have, however, to note sales of 50 tons G. O. B.s,at £57¼,and 50 tons of picked marks, at £58 cash, which latter price is still asked for any of the favorite brands, while best sorts continue to be quoted $58½@59. Some doubt is thrown on the corectness of the returns of stock in Havre: and it is said, on rather good authority, that the quantity lying there has latterly been somewhat exaggerated. The matter is now being carefully looked into, and we hope to be able to give precise and correct figures when we again issue our statistical table at the close of present month."

And under date of December 19th, the following:

"One or two small lots of common marks. Chili bars were offered this evening from second hands, at £57, without brokerage; the owners of these parcels declined, however, to sell them on customary terms, so no business resulted. For favorite brands, the quotations rule: £57¾@ £58, and 50 tons of best mark found a purchaser at £58¾. Of Wallaroo Lake, there are sellers at £67½, and of Burra at £65, with nothing doing."

Tin.—A sale of 25 tons of Straits, at 13¾c., for January shipment is reported, while there is a rumor that an additional 25 tons has been sold, but this we have failed to confirm. Straits, L. & F., and Refined are quoted nominally, on spot, at 14¼@14⅓c.; Straits in London was quoted yesterday at £61 10s. and at Singapore at $18.75, with lower exchange. The shipments from the Straits during the last half of December to the United States were 230 tons by steam and 30 tons by sail; to Great Britain, 350 tons by steam. The total shipments to the United States in 1878 were 4110 tons, as against 4428 tons in 1877, and to Great Britain in 1878, 3550 tons and in 1877, 2465 tons.

A correspondent, writing from London, under date of December 19th, says:

"The only transaction recorded was a sale of 5 tons Australian at 61s., but it is rather doubtful whether any more could be obtained at that figure, the general quotation being 61½s."

Tin Plates.—There has been no business worthy of note in these. We quote as follows: Charcoal, bright, ⅛ X, Melyn grade, $5.87½@$6, and Allaway grade, $5.75@$5.87½; charcoal ternes, Allaway grade, $5.25@$5.37½; coke bright, B. V. grade, $5@$5.12½, and roofing, 14×20, $4.70.

Messrs. Robert Crooks & Co., of Liverpool, under date of December 19th, say of tin and terne plates:

"For any parcels of coke tins absolutely required, stiff prices must be paid—stiff, that is, in comparison with figures lately ruling—but not high compared with cost or average quotations. Best charcoal tins are also better booked and more independent, and while second grade charcoals are, for the present, weak, we are not without very strong indications of an early diminution of late excessive production. Ternes are in little demand, at steady paices."

Lead.—There is no business doing. We quote nominally at 4c. for ordinary.

Spelter and Zinc.—We are reported 50 tons of spelter sold at 4⅜c. The market closes at 4½@4⅝c. Sheet zinc is dull, at 6½c.

Antimony.—Without business, we quote at 11⅝@ 11¾c.

Quicksilver.—The San Francisco *Commercial Herald* of December 26th says:

"The supply is liberal and the local consumptive demand light. It is said that our largest Pacific Coast mine consumers have at least a year's stock in hand, while speculative holders are carrying considerable, bought at prices above those now ruling. The present nominal price is 40c. and some say they can buy at 39c., while a third party says he refused 39c. on Saturday for 300 flasks. A London cable gives the price in that city, December 21st, at £6 7s. 6d. per bottle."

THE BULLION MARKET.

NEW YORK, Friday Evening, Jan. 3, 1879.

The market has been without special feature during the week and has been very steady. The closing prices of silver were: London, 49 1/16d. per oz.; New York, $1.08⅜ per oz., and San Francisco 15 per cent discount.

DAILY RANGE OF SILVER IN LONDON AND NEW YORK, PER OZ.

DATE.	London Pence.	N. Y. Cents.	DATE.	London Pence.	N. Y. Cents.
Dec. 28	49 9-16	108¼	Jan. 1	.....	.....
Dec. 30	49⅝	108¼	Jan. 2	49⅝	108¼
Dec. 31	49⅝	108¼	Jan. 3	49 11-16	108⅜

BULLION SHIPMENTS.

We give below a statement showing the latest bullion shipments in addition to those announced in our issue of December 28th:

December 18	Northern Belle	Nev.	7,865.14
" 18	Jefferson	"	2,049.07
" 19	Manhattan	"	33,034.88
" 20	California	"	216,541.63
" 23	Navajo	"	5,200.00
" 23	Grand Prize	"	27,000.00
" 17	Bodie	Cal.	23,821.40
" 18	Extra	"	6,524.00
"	—Standard	"	*69,317.77
" 24	Ely Mill	Utah	2,000.00
" 26	Silver Reef	"	21,481.82
" 17	Black Jack	Ida	8,840.00

The Hackberry Mine, Ariz., is turning out about $40,000 per month at an expense of $15,000. The mine, in its shafts, tunnels, and drifts, looks well, and is regarded as as a very rich and excellent property.

The Precious Metal Product for 1878.—SAN FRANCISCO, January 1.—Wells, Fargo & Co.'s annual statement of precious metal produced in the States and Territories west of the Missouri River, including British Columbia, and the receipts in San Francisco from the West Coast of Mexico during 1878, shows aggregate products as follows: Gold, $38,956,231; silver, $38,746,391; lead, $3,452,000; the total being less over $17,000,000 than for 1877. The exact yield for that year, as reported by this company, amounted to $98,500,000. The production by States and Territories for 1878, were as under: California, $18,920,461; Nevada, $35,181,949; Oregon, $1,213,724; Washington, $73,311; Idaho, $1,868,122; Montana, $9,763,640; Utah, $6,064,613; Colorado, $6,232,747; New Mexico, $453,813; Arizona, $2,287,983; Dakota, $2,215,804; Mexico (west coast), $1,594,995; British Columbia, $1,293,430. The bullion from the Com-

stock lode contained 45 per cent gold and 55 per cent silver. Of the so-called "base-bullion" from Nevada, 30 per cent was gold, and of the whole product of the State, 35 per cent was gold. All the probabilities now indicate that the yield of gold and silver, from all sources named, for 1879, will not greatly exceed $70,000,000.

The Coin Balances in the U. S. Treasury, January 1st, 1879, compared with the year previous :

	1878.	1879.
Coin	$139,518,405.30	$224,865,477.62
Coin and silver certificates	33,424,900.00	24,076,830.00
Coin, less gold and silver certificates	106,093,505.30	200,788,647.62
Outstanding coin liabilities	5,907,346.95	4,624,257.12
Outstanding sil'r c'n	38,033,484.19	39,031,957,25
Total debt, less cash in Treasury	$2,045,955,442.79	$2,028,648,111.00

Resumption Accomplished.—The New York *Times* of to-day says: "Resumption of specie payments became an accomplished fact yesterday, not only without a jar, but with a positive gain of gold at the Sub-Treasury in this city. There was only $130,000 in notes presented for redemption, while $400,000 in gold coin was received in exchange for legal tenders. The banks had a similar experience, and bondholders, as a rule, preferred notes to coin on drawing their interest. This state of things will continue just as long as the ability of the Treasury to redeem its notes in gold coin continues unquestioned, and just as long as the amount of depreciated siver coin in hand bears a small enough proportion to the gold as not to interfere with its proper place as a subsidiary element in the circulation. The power of the Treasury to retain an adequate stock of gold must obviously depend very largely on the limit assigned to its obligation to continue the coinage of silver. The present limit must be very materially abridged if resumption is to be a permanent success."

The Pinal County (Arizona) Bullion Shipments for 1878, it is stated, will considerably exceed $1,000,000.

Regulations for the Purchase of Gold Bullion in Idaho.—Mr. A. Wolters, Assayer in charge of the United States Assay Office in Boise City, Idaho, publishes in the Bed Rock *Democrat* the following :

"UNITED STATES ASSAY OFFICE,
"BOISE CITY, I. T., December 5, 1878.

"From and after this date gold bullion will be purchased at this office on account of the United States, and paid for at its coining value in United States legal tender notes at par, subject to the following deductions :

"1. One tenth of one per cent for melting and assaying, with a minimum charge of $0.20 for any deposit of less value than $100.

"2. When the character of the bullion is such as to require toughening, a charge for that operation will be made of from ½ to 2 cents per oz. gross, according to the condition of the deposit, and on any such deposit of less weight than 5 oz. the charge will be imposed as if the weight was 5 oz.

"3. A deduction will be made from each purchase at the rate of $10 per $1000, to pay for the cost of expressage to the mint at San Francisco.

"4. When the bullion contains silver to the amount of 50 cents over and above the expense of parting it from the gold, a charge of 8 cents per oz. gross will be deducted and the balance of the silver paid for at the rate of 97 cents per standard oz. (900 fine), but if, after deducting the parting charge, less than 50 cents remain, no allowance will be made for it to the depositor. When partable bullion contains over 100 base metal, an additional parting charge of 1 per cent per oz. gross will be imposed."

The Mint at New Orleans will be opened for coinage about the 15th inst.

Silver Bullion Purchase.—The Secretary of the Treasury yesterday purchased 400,000 ounces of silver "at satisfactory prices." There were fewer bidders than on previous occasions, but the quantities offered were larger. The total number of standard silver dollars coined to January 1st were 22,111,500, and of this number 16,648,621 are still in the Treasury and Mint.

The United States Mint Coinage for 1878.—The coinage executed during the year 1878, at the various U. S. mints, was as follows :

Denomination.	No. of Pieces.	Value.
Double-eagles	543,645	$10,872,900.00
Eagles	73,800	738,000.00
Half-eagles	131,740	658,700.00
Three dollars	82,324	246,972.00
Quarter-eagles	286,260	715,650.00
Dollars	3,020	3,050.00
Total gold	1,129,789	$13,235,242.00
Dollars	10,509,550	10,509,550.00
Trade dollars	900	900.00
Half-dollars	1,378,400	689,200.00
Quarter-dollars	2,260,800	565,200.00
Twenty cents	600	120.00
Dimes	1,678,800	16,800.00
Total silver	5,829,050	$11,932,850.00
Five cents	2,350	117.50
Three cents	2,350	70.50
One cent	5,799,850	57,908.50
Total base	5,804,550	58,186.50
Grand total	22,754,389	$25,226,278.50

U. S. Assay Office Business for December, 1878.—The following is a statement of business at the United States Assay Office at New York for the month ending December 31st, 1878 :

Deposits of gold		$935,000.00
Deposits of silver, miscellaneous	$82,000.00	
U. S. bullion, Colorado	450,000.00	
U. S. bullion, Lake Superior	95,000.00	
U. S. bullion, Montana	62,000.00	
U. S. bullion, New Mexico	80,000.00	
U. S. bullion, Utah	50,000.00	
		819,000.00
Total deposits		$1,754,000.00
Gold bars stamped	$1,004,432.76	
Silver bars stamped	739,403.35	
		1,743,836.11

Salt Lake Ore and Metal Market.

SALT LAKE CITY, Utah, Jan. 3, 1879.

Argentiferous Lead (Base Bullion). $35 per ton for lead ; $1.12 per ounce for silver ; $20 per ounce for gold. The quotations for silver are based upon the silver in the lead of 80 to 120 ounces per ton of 2000 lbs.

Recent Ore Shipments from San Francisco were as follows : The Colima, for Panama, carried, *en route* for New York, 20,000 lbs. unspecified ; also for Germany, via the Isthmus, 194,899 lbs. of base bullion and 14 bars of copper ore.

Boulder County (Colo.) Ore Product for 1878.—The Boulder *News and Courier*, of December 27th, publishes the following : "On account of the many channels for the disposal of ores, especially the smaller lots of the higher grades—which in the aggregate amount to no mean sum—it is somewhat difficult to arrive at the ore product of a given section. Below, we give an approximation of the larger amounts which have been purchased, or treated within the county and handled as bullion, for the year just closing :

Bullion shipped by express up to 20th inst	$314,519.00
Same (estimated to end of year)	10,000.00
Purchased by Boston and Colorado Reduction Company's works at Black Hawk, for 10 months ending with October : Gold, $178,000 ; Silver, $73,000	250,000.00
Same, at Argo works for months of November and December (estimated)	50,000.00
Paid by Golden Smelting Company up to 23d inst., net	40,123.50
Add deductions for loss and treatment (estimated)	8,000.00
Small lots of rich ores shipped to Omaha and Newark, say	10,000.00
Ores shipped to other points, say	10,000.00
Bullion sent out of the county other than by express, say	20,000.00
Total	$713,642.50

"This will probably be rather under than over the actual yield. The Trenton Works at Golden are supposed to have purchased some ores in the early part of the season, and probably some of the Denver works bought small lots. The shipments to Omaha and Newark have fallen off largely of late years, but we are assured that they still receive occasional lots. Boyd's product all goes into the express company's shipments. But private individuals are often intrusted with small lots of bullion which are not thus accounted for."

The Enhancing Value of Tailings.—The Georgetown (Colorado) *Miner* says : "We hear that Mr. Beamer, the station-agent at Lawson, has leased the whole of the Free America dump and is shipping it to the Miles Concentration Works at Idaho Springs for treatment. We are informed that the refuse mineral is worth $128 per car at Idaho without sorting, and, as it is hauled down to Lawson at a very moderate expense, the enterprise is doubtless profitable. The Boulder Nest dump is also undergoing the same treatment, and we learn that this is richer than the Free America dump, which is highly probable. Now that transportation and labor are reasonably cheap and the facilities for treating this grade of mineral unequaled, we may expect to see the leasing and overhauling of what has hitherto been considered refuse material a general and by no means unprofitable feature of our mining industry.

FINANCIAL.

New York Stocks.

NEW YORK, Friday Evening, Jan. 3, 1879.

The coal stocks continue to attract a great deal of attention and have shown considerable improvement during the week. The sales of Delaware and Hudson Canal have amounted to 7586 shares, at 37@40, closing at 39⅝ ; of Delaware, Lackawanna, and Western RR., 165,000 shares, at 41@45¼, closing at 44⅞ ; of New Jersey Central, 26,742 shares, at 31½ @35, closing at 34⅝.

Coupons and interest on the bonds of the following companies fall due during the month :

American Dock and Improvement Co.—Coupons due.
Baltimore and Ohio RR. Co.—Interest on preferred stock, bonds of 1880 ; coupons.
Boston, Hartford and Erie RR.—Coupons paid by Delaware and Hudson Canal Co.
Cannelton Coal Co.—Coupons.
Central RR. of New Jersey.—Cons. Bonds; interest due.
Chesapeake and Ohio Canal.—Coupons due.
Consolidation Coal Co.—7 per cent and conv. bonds; coupons.
Crown Point Iron Co.—Coupons.
Cumberland Coal and Iron Co.—1st mortgage bonds; coupons.
Dade Coal Co.—Coupons.
Delaware and Hudson Canal Co.—Reg. first-mortgage bonds, 1884, 1891 ; interest.
Eureka Coal Co.—Coupons due.
Holliday Coal Co.—Coupons.
Mahoning Coal RR. Co.—Coupons.
Maple Grove Coal Co.—Coupons due.
Milwaukee Iron Co.—Coupons due.
Monongahela Nav. Co.—Coupons.
Morris and Essex RR. Co.—Interest paid by Delaware, Lackawanna, and Western RR. Co.
Quicksilver Mining Co.—Coupons.
Swedes Iron Co.—Coupons.
Thomas Iron Co.—Coupons
Union Coal Co.—Coupons paid by the Delaware and Hudson Canal Co.

Miscellaneous Stocks and Quotations.

Sales and quotations of the stocks and bonds dealt in here, at Philadelphia and Baltimore, for the week ending the 3d inst. are given in the following tables. The Philadelphia quotations will have a * affixed. The Baltimore quotations are indicated thus †.

Stocks.	Par Value.	High'st	Lowest	Closing	Sales : Shares.
American Coal Co.	$25	. . .	.....	30	.....
St.L.,I.M.& S.R.Co..	100	13⅞	13½	13	500
Spring Mt. Coal Co.	50	.....	.....	50	.....
*Cambria Iron Co..	50	.....	.....	59	.....
*Penn. Salt Mf'g Co.	50	.....	.....	67	.....
*Westm'land C. Co.	50	.....	.....	45½	.....
*Buck Mt. Coal Co..	50	.....	.....	38	.....
*Schuyl. Nav. Co...	50	.....	.....	...	.....
†B.&O.RR.Co.1st pf	.....	.....	.....	99	.....
†B.&O.RR.Co.2d pf	100	.....	.....	95	.....
" " " com	90	88½	88	88	144
†George's C'k C. Co	100	.....	.....	86½	.....
†S. Clara M'g Co...	100	.....	.....	25	.....
†Atlantic Coal Co..	10	.....	.....	75	.....

Bonds.	Princ'l. When Due.	Int'est. When Due.	Hig'st.	Lowest	Amount.
D., L. & W., 7s, conv	1892	J. & D.	102	.....	5,000
" " " 2d mtge.	1881	M. & S.	105¼	.....	1,000
N.J.C.,1stmtge.new	1890	F. & A.	116	.....	2,000
" " 1st mtge.,con	1899	Q.	73	72¼	*172,400
" " convt.	1902	M. & N.	72	70⅛	*30,000
Lehigh & W. B., con	1899	Q.	35¾	35⅛	*15,000
Am. Dock & Imp. 7s	.....	J. & J.	50½	..	*5,000
St.L.I.M.& S..1st mt	1892	F. & A.	.....	110	.....
Ches. & O., 1st mtge	1899	M. & N.	.....	28½	.....
D & H C Co.,1stm.rg	1884	J. & J.	.....	.....	.....
" " " " "	1891	J. & J.	92¼	.....	2,000
" " " " m.loan cp	1894	A. & O.	94¾	.....	1,000
" " " " " rg.	1894	A. & O.	.....	.....	.....
" " " " new mge.	.....	.....	.....	.....	.....
*L.V.R.,1stm.6s.cp.	1898	J. & D.	.....	110½	....
" " " rg.	1898	J. & D.	.....	111	.....
" " " 2d m. 7s,rg.	1910	M. & S.	116	.....	7,000
" " " con.m.6s,rg	1823	J. & D.	....	.....	.....
" " " 6s cp.	1923	J. & D.	.....	.....	.....
*Pa.RR.,1st m.6s,cp	1880	J. & J.	.....	105¼	.....
" " g. m., 6s, cp.	1910	J. & J.	99⅝	.....	1,000
" " " 6s, rg.	1910	A. & O.	.....	.....	.....
" " con.m.6s,rg.	1905	Q.	100	.....	12,000
" " " 6s, cp.	1905	J. & D.	99⅝	99½	32,000
" " new loan, 5s	.....	.....	111⅜	111	1,500
*P.& R. R., 1st m.6s, R. C. 43-44	1880	J. & J.	.....	110	.....
P. & R. R., 1st m. 6s, R. C. 48-49	1880	J. & J	.....	.....	.....
P.& R. R.,2d m.7s cp	1893	A. & O.	.....	.....	.....
" " " scrip	1882	J. & J.	.....	....	.....
" " " in.m.7s,cp	1896	J. & D.	.....	.....	.....
" " " c.m.7s,cp.	1911	J. & D.	99	98	13,000
" " " 7s. rg.	1911	J. & D.	98	.....	1,000
" " " cvt.7s,R.C	1893	J. & J.	30†	.....	10,000
" " C.& I.Co.,Deb 7s, R. C.	1892	M. & S.	.....	.....	....
& R.C.& I. Co., m. 7s, R. C.	'92–3	various	.....	.....	....
L. Nav. Co.,6s,rg.m.	1884	J. & D.	102½	.....	7,000
" " RR., rg. m.	1897	F. & A.	.....	.....	.....
" " cvt. co. G. R.	1894	M. & S.	.....	.....	.....
" " "Gold R. C.	1897	J. & D.	90½	.....	5,000
" " con.m.7s,rg.	1911	J. & D.	55	.....	4,000
*P.& N.Y.C.,7s,R.C.	1896 / 1906	J. & D.	113	.....	3,000
*Pa Canal, 6s. cp..	1910	J. & J.	.....	.....	....
*Schuyl.Nav.,1st m. 6s. rg.	1897	M. & O.	.....	.....	....
*Sus.Coal, 6s, rg...	1911	J. & J.	85	.....	1,000
†Balt.&O. RR., 6s..	1880	J. & J.	....	100	.....
" " " " 6s..	1885	A. & O.	.....	105	....

Total transactions for the week.....$300,900

* Assented. † Ex-Coup.

Philadelphia Stocks.

PHILADELPHIA, Friday Evening, Jan. 3, 1879.

This market has afforded a fair business to the coal stocks during the week closing with to-day, and prices have improved in every instance. The sales have been as follows: Lehigh Coal and Navigation Co., 3726 shares, at $14⅜@$15; Lehigh Valley RR., 4681, at $32¾@$33⅛; Pennsylvania RR., 24,337, at $32⅛@$33¼, and Philadelphia and Reading RR., 12,915, at 11⅝@12⅝c.

The Philadelphia and Reading RR. Co. announces a dividend upon the *East Pennsylvania RR. Co.*, of $1½ per share payable January 21st.

The East Mahanoy RR. Co., announces a dividend of $1½ per share, payable January 15th.

COAL STOCKS.

Quotations of New York stocks are based on the equivalent of $100. Philadelphia prices are quoted, so much per share.

Name of Company.	Capital Stock.	Shares. No.	Shares. Par Val.	Last Dividend. Mo.	Last Dividend. Y.	Last Dividend. A't.	Rate per Ann.	Dec. 28. H.	Dec. 28. L.	Dec. 30. H.	Dec. 30. L.	Dec. 31. H.	Dec. 31. L.	Jan. 1. H.	Jan. 1. L.	Jan. 2. H.	Jan. 2. L.	Jan. 3. H.	Jan. 3. L.	Sales.
	$		$	Mo.	Y.	A't.	Per c'nt													
Consol. Coal.	10,250,000	102,500	100	Jan.	77	2½	....	.....	...	24½	24½	...	...	.....	.....	...	...	39⅝	39¼	60
Del. & H. C..	20,000,000	200,000	100	Aug	76	4	9	37½	37	37½	37⅜	38	37½	.....	.....	40	38	39⅝	39¼	7,586
D., L.&W. RR.	26,200,000	524,000	50	July	76	2½	5	42	41	42¼	41⅜	42⅞	42	.....	.....	44½	43	45¼	43⅝	165,000
Lehigh C.& N	10,448,556	208,971	50	Nov	76	1½	5½	144½	143⅝	144½	143⅝	144½	143½	.....	.....	147⅛	145⅛	15	.....	3,726
Leh. V'y R. R	27,228,855	540,858	50	Dec	78	1	4	33½	32¾	33½	33⅜	33¼	33⅛	.....	.....	33⅛	33¼	33⅞	33¼	4,681
Maryl'd Coal	4,400,000	44,000	100	Jan.	76	1½	1½	.....	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
N. J. C. R. R.	20,600,000	206,000	100	Apr	76	2½	2½	32⅜	31¼	33¼	32⅝	33⅜	33	.....	.....	34⅜	33⅛	35	33¾	26,742
Penn. Coal..	5,000,000	100,000	50	May	78	3	....	.....	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Penn. R. R...	68,870,200	1,337,404	50	Nov	78	2	8	32⅛	32⅛	32⅞	32½	33¼	32¾	.....	.....	33¼	32⅞	32¾	32⅝	24,337
Ph. & R. R. R	34,278,175	685,563	50	Jan	76	+2¼	10	11¾	11⅝	12	11¾	12⅛	12	.....	.....	12⅜	12⅛	12⅜	12¼	12,91

The Delaware and Hudson Canal Co. has paid in dividends to date $38,821,104, and the Philadelphia and Reading $43,012,497

Total Sales.....245,047.

ANNUAL MEETINGS.

Bell's Gap RR. Co	Jan. 13
Philadelphia, Wilmington, and Baltimore RR. Co	" 13
Phildelphia and Reading RR. Co	" 13
Pennsylvania and New York Canal and RR. Co	" 13
Perkiomen RR. Co	" 13
Pickering Valley RR. Co	" 13
Chester and Dela. River RR. Co	" 13
East Mahanoy RR. Co	" 13
East Pennsylvania RR. Co	" 13
Allentown RR. Co	" 13
Reading and Columbia RR. Co	" 13
Colebrookdale RR. Co	" 20
Lehigh Valley RR. Co	" 21
Cambria Iron Co	" 21
Central Petroleum Co	" 6
Hirsch Propeller Co	" 7
Rubber-Cushioned Axle Co	" 8
N. Y. Elevated RR. Co	" 14

Gas Stocks.

NEW YORK, Friday Evening, Jan. 3, 1879.

The market remains the same as last week, exceedingly dull, the only exception being Brooklyn gas stock which we lower from 18 to 16 bid, in face of its January dividend.

COUPONS on the following companies, bonds falls due during the month:

Campaign-Urbana (Ill.) Gas Co.
Joplin (Mo.) Gas and Coke Co.
Kankakee (Ill.) Gas Co.
Lawrence (Mass.) Gas, Coke, and Coal Co.
Omaha (Neb.) Gas Co.

The following list of Companies in New York and vicinity is corrected weekly by GEORGE H. PRENTISS, Broker and Dealer in Gas Stocks, No. 30 Broad street, New York:

COMPANIES IN NEW YORK AND VICINITY.	Capital Stock.	Par.	DIVIDENDS. Rate per ann.	Am. of last.	Date of last.	QUOTATIONS. Bid.	As'd.
	$		P. ct.				
Mutual, N. Y.	5,000,000	$100	6	1½	Oct., '78	50	60
" Bonds	90,000	1,000	6	3½	Aug., '78	90	96
N. York "	4,000,000	.....	8	4	May, '78	78	80
Metrop. "	2,500,000	100	10	5	Aug., '78	95	102
" Certfs	1,000,000	.....	7	3½	" '78	90	92
Harlem "	1,850,000	50	6	3	Feb., '78	28	35
Manhat. "	4,000,000	50	....‡	5	May '78	145	150
Brooklyn, Bkln.	2,000,000	50	15	5	Jan., '79	115	120
Nassau	1,000,000	25	....‡	3	July, '78	50	55
" Certfs	700,000	1,000	7	3½	May, '78	80	85
People's	1,000,000	10	....‡	3½	Jan., '76	16	25
" Certfs	300,000	1,000	7	3½	July, '78	70	75
" Bonds	325,000	.....	7	3½	May, '78	90	96½
Metrop. "	1,000,000	100	5	2½	May, '78	50	60
W'msb'g "	1,000,000	50	8	1½	July, '78	70	80
" Certfs	1,000,000	.....	7	3½	July, '78	85	90
Citizens'	1,200,000	20	....‡	3	July, '78	53	60
" Certfs	320,000	1,000	7	3½	Apr '78	90	95
J. C., N. J.	750,000	20	10	7½	Jan., '79	125	135
Municipal, N. Y.	466,000	50	.....	.....	.....	80	90
" Bonds	750,000	.....	.....	.....	.....	.....	...
.....	.....	.....	.....	.....	.....	.....	...

Copper Stocks.

Reported by WILSON W. FAY & Co., Brokers in Mining and Miscellaneous Stocks, Room 7, Traveller Building, 31 State street.

BOSTON, Thursday Evening, Jan. 2, 1879.

The present week has been quite dull in the copper stocks, and there was also very little doing in the silvers. The transactions have been confined to Calumet and Hecla and Duncan, and a single transaction in Franklin, and have been rather small. These stocks are, nevertheless, about as good investments at the present figures as can be found upon the market, and we should not be at all surprised to see every one of them selling for higher figures in the course of a few months; and any person looking for a speculative investment would do well to examine into some of them.

Calumet and Hecla has been firm at 174@174½, and sales at those figures.

Central is dull at 25@28.

Copper Falls is firmer at 1 1-16 @ 1 3-16, and will probably go higher. There was about 4500 shares sold at auction on Monday last at $1.00 per share, for non-payment of assessment.

Franklin sold at $5.00, and closes firms at 4½@5.00.

Osceola is quiet at 10½@11¼, and no sales.

Pewabic is dull at 1¼@1⅝.

Quincy has become suddenly quiet, and closes rather soft, at 13¾@14.

Ridge is firm at 1¼@1½, and looks as though it was a good purchase, as there is a good demand for it.

Duncan is firm, having sold up to 4, and closes at 3¾@4.

International is also steady at 45@50, and sales at 45.

Silver Islet is quiet and rather weak, at 41@42.

Gold and Silver Stocks.

NEW YORK, Friday Evening, Jan. 3, 1879.

The business in mining stocks during the week closed with to-day has been even smaller than its predecessor. The question of making the gold-room of the New York Stock Exchange a Mining Exchange is still undecided, and until this is settled, not much change in the character or amount of business will be observable.

For so quiet a week a very fair amount of business was done in the San Francisco stocks. We note the following transactions: Belcher, 400 shares, at $4; California, 180, at $10⅝@$11; Consolidated Virginia, 530, at $8@$8⅝; Gould and Curry, 275, at $9¼@$9⅜; Grand Prize, 5, at $8¾; Independence, 400, at $1.15@$1.05; Leeds, 10, at $1.50; Sierra Nevada, 150, at $44; Yellow Jacket, 50, at $14⅛; Bullion, 250, at $5@$4¾; Julia, 1100, at $3.10@$5⅝; Navajo, 300, at 40@45c.; and Tip Top, 100, at $1.30.

Sutro Tunnel, at the New York Stock Exchange, was dealt in to the extent of 1440 shares, at $3½@3¾. Ontario only records sales of 35 shares, at $39½ @$39. This company's product, from December 4th to December 27th, was $107,133.49. Its new pumping works are in operation and it is expected that the water would soon be removed from the mine. The quantity of ore at the mill is sufficient to keep it supplied for some weeks to come.

In the more prominent stocks of the regular list of our Stock Exchange we note the following business: Findley, 1300 shares, at 62@57c.; Moose, 1700, at $4.55@$4.35; Plumas, 2050, at $3.35@$3.40; Seaton, 300, at 70@75c., and Hukill, 3100, at $3.35@$3.45.

The Plumas National Gold Mining Co. has declared a dividend of 10c. per share, payable on the 17th inst. At a meeting of the directors of this company, held in this city, Dec. 30th, a reorganization of the management was made. Mr. H. C. Bidwell was made President, and the following board of directors was appointed: H. C. Bidwell, Ivan Powattain, Henry J. Rogers, C. W. Reed, and Wm. H. Guion. Henry J. Rogers was made Transfer Secretary, and L. P. Bayne & Co. were continued as financial agents.

The Hukill Gold and Silver Mining Co. has issued the following circular:

OFFICE OF THE HUKILL GOLD AND SILVER MINING CO.,
17 Broad street, New York, December 30, 1878.

The directors of the Hukill Gold and Silver Mining Company submit to their stockholders the following statement:

The company owns on the Hukill and Whale, by recent developments proved to be one and the same vein, 1288 feet on the former, and 1900 feet on the latter, making a total length of 3188 feet of lode. The company also owns about thirteen acres of Placer ground, under which the vein runs, and on which are located the mill and other buildings, and the boundaries of which include the valuable water-power of the company. With the exception of wages for the current month, not yet due, the company owes no debt whatever.

While the mill machinery was in course of erection, a large amount of ore was accumulated, and since the mill began running, although its capacity is about one ton per hour, there is still a large accumulation, until at the present time it probably amounts to not less than 3000 tons. The mill building, a very large and substantial structure of brick and stone, is of sufficient size to accommodate three times the amount of machinery now in use, while the magnificent water-power is entirely ample to run this increased amount. Again, only a portion of the Hukill mine is as yet fairly developed—say 700 feet out of 1288—while the Whale is scarcely developed at all; so that it seems tolerably clear that as the mill can not even now keep pace with the production, and that since the output can easily be very largely increased, additional mill facilities should be provided without unnecessary delay. Steps have already been taken to do this, and the work will be prosecuted as rapidly as possible.

In view of these facts, as well as from further considerations to be stated presently, the directors announce that hereafter the company's policy will be to make quarterly statements and dividends rather than monthly, and that during the current quarter ending on the first of April next, such part of the earnings as are required will be used in increasing the capacity of the mill and in further developments of the mine.

The ores of the Company after crushing and concentration are sold either in Denver or at Black Hawk. There is not infrequent detention from lack of cars upon the railroad and from other causes, especially from snow in winter. After reduction, communication must be had back to the mill by mail, and again to the office in New York, the whole occupying from seven to ten days. More time is needed in order to give definite and detailed results of the business during the time covered by the statements.

Owing to the protracted and serious, though it is hoped not dangerous, illness of Mr. Delano, the Superintendent of the Company, the officers are not able at present to give a full and specific statement of the affairs of the production and expenses of the company during the past six months. Statements, however, from this time forward, will be made as often as once in each quarter, giving in detail the operations of the Company, at which times such dividends will be declared and paid as the earnings, condition, and prospects of the company will warrant.

J. L. BROWNELL, President.
S. V. WHITE, Treasurer.

Under these circumstances, we congratulate the management upon taking this action, believing that it will be for the best interests of the stockholders, and that the earnings spent in the manner proposed, must eventually greatly enhance the value of the company's shares.

The dealings in the fancies have been small during the past week. We note the following transactions: American Flag, 3700 shares, at 21@19c.; Bertha & Edith, 18,900, at 8@10c.; Buckeye, 1800, at 53@51c.; Dahlonega, 6700, at 16@15c.; Gold Placer, 32,500, at 22@17c.; and Lacrosse, 14,900, at 30@27c.

The San Francisco *Stock Report*, in commenting on some of our recent remarks, says:

"The JOURNAL corroborates what we have repeatedly informed our readers regarding the growing interest of Eastern people in mining stocks. Now, this interest can be made of mutual advantage to the people of the East and the Pacific slopes. We have more stocks in the market than can be handled with the capital of this coast. We have more good mines than we can develop without the aid of Eastern and foreign capital. For these and other good and sufficient reasons all our prominent mining stocks should be placed in the Eastern market. San Francisco will always be the focus of mining speculation, no matter what facilities are afforded people to trade in New York."

The same paper has the following remarks upon the Arnold Gold and Silver Mining Co.:

"The Eastern papers—some of them, at least—are constantly howling about the worthlessness of many of the mining properties brought to the notice of the public on this coast. We are told that Eastern people can have no faith in companies organized on this coast because of the frequency with which our yowling wild cat buries his claws into the flesh of the unsuspecting Eastern victim. Eastern investors are cautioned, time and time again, to invest only in Eastern companies, organized and controlled by reputable men, for the working of really valuable properties. That may be sound advice. But we want to ask these Eastern journals what is likely to be the result of investing in a stock which public notice is invited to in such shape as this. We clip the thing from one of their journals:

"'The Arnold Gold and Silver Mining Company, of Arizona, offers a small number of the shares of its preferred Capital Stock for sale—enough to raise money to complete its mill. The mill will work 40 tons of ore per day, which, taken at its lowest average working, $100 per ton, will yield $4000 per day, from which deduct the entire expense of mining and milling, $200; leaves a net yield of $3800 per day, 1000 tons of ore can be taken from the mine daily. The Arnold is one of the finest mines in Arizona; over $35,000 has been spent in developing this fine property, every cent of which has been taken from the mine and worked in an arastra. The mine has produced over $45,000 in the six years that it has been worked. This stock is non-assessable. For prospectus and full particulars, address ARNOLD GOLD AND SILVER MINING CO.'

"Could a bait be more wretchedly prepared to catch gudgeons than that? Why, there isn't a mine in the whole territory that is yielding to-day $60,000 a month, let alone $120,000. The famous Silver King only produces about $60,000—the last month's yield was not that much. And the idea of asserting that 40 tons of ore per day can be mined and milled for $5 per ton! It is such fraudulent statements as that, that enspare the guileless investor to his ruin, and we caution readers of the above advertisement to go slow. It is very good ore in Arizona that will average $100 per ton all through, and $50 a ton is a very fair estimate of the cost of mining, milling, freight on bullion, discount, etc. As to the extent of the 'Arnold' orebody we, of course, know nothing, for we never before heard of the mine; but if 1000 tons of $100 ore can be taken from it daily, it is a property unequaled by any thing ever found on this continent. If it is like most of the undeveloped Arizona locations, the mine might, under an ore extraction at the rate of 1000 tons a day, last, perhaps, three-quarters of an hour, but no longer."

The Fuller Placer Mining Co., on the 28th ult., declared a dividend of 5 per cent, payable at the office of the company in Boston, on the 1st inst. The property of this company is located in Colorado, and was fully illustrated and described in the JOURNAL about a year ago. The capital stock of the company is $500,000, divided into shares of the par value of $100 each.

SAN FRANCISCO MINING STOCK QUOTATIONS.
Daily Range of Prices for the Week.

NAME OF COMPANY	CLOSING QUOTATIONS. Dec. 27.	Dec. 28.	Dec. 30.	Dec. 24.	Jan. 1.	Jan. 2.	Opening. Jan. 3.
Alpha	10½	10⅝	10⅞	10¼	.....	10½	11
Alta	5	5⅛	5¼	5	.....	5	5
Argenta	.....	.....	.....	.....	.....	.....	.....
Bechtel	.....	70	70	70	.....	70	.....
Belcher	3½	3⅝	3⅝	3¾	.....	3¾	3½
Belle Isle	.....	.....	.....	.....	.....	.....	.....
Benton	.....	.....	.....	.....	.....	.....	.....
Best & Bel.	17	17	17¼	18⅛	.....	18	17½
BlackHawk	.....	.....	.....	.....	.....	.....	.....
Bodie	8	8	7⅞	7⅞	.....	7¾	.....
Booker	.....	.....	.....	.....	.....	.....	.....
Bullion	4⅝	5	5¼	5½	.....	4¾	5⅞
Bulwer	.....	.....	.....	.....	.....	.....	.....
Caledonia	2½	2⅜	2¼	2½	.....	2⅜	2½
California	9⅞	9¾	10	10¼	.....	10¾	10⅞
Chollar-Pot	38	38½	41	47¼	.....	41	43
Confidence	9¼	.....	9¼	.....	.....	.....	.....
Con. Imp	.....	.....	.....	.....	.....	.....	¾
Con. Va	7⅞	7¾	7¾	8	.....	8¼	8⅛
Crown P'int	3½	3½	3½	3½	.....	3½	3¾
Endowm'nt	.....	.....	.....	.....	.....	.....	.....
Eureka Con	31	31½	31	32	..	32	.....
Exchequer	3⅞	‡	4¼	4¼	.....	4¼	4¼
Goodshaw	.....	.....	.....	.....	.....	.....	.....
Gould &Cur	8¾	8¾	8¾	9	.....	9¼	9½
Grand Prize	7½	8	7⅞	8⅛	.....	7¾	.....
Hale & Nor.	10½	10¾	10⅝	11⅝	.....	12	12⅛
Hamburg	.....	.....	.....	.....	.....	.....	.....
Homestake	.....	17½	17½	17½	.....	17½	.....
Hussey	.....	40	40	40	.....	40	.....
Indep'd'nce	.....	1½	1¼	1¼	.....	1.10	.....
Jackson	.....	.....	.....	.....	.....	.....	.....
Julia Con	2¾	2¾	5½	5⅝	.....	4½	4¼
Justice	3⅝	3½	3½	3⅝	.....	3¾	3¾
Kentuck	3⅞	.....	3⅞	.....	.....	.....	3¾
Kossuth	.....	15	15	15	.....	15	.....
Leopard	.....	1	1	1	.....	60	.....
Leviathan	.....	35	.....	40	.....	½	.....
Manhattan	.....	.....	.....	.....	.....	.....	.....
McClinton	.....	.....	.....	.....	.....	.....	.....
MeadowVal	.....	.....	.....	.....	.....	.....	.....
Mexican	28	29½	30¾	31	.....	32	33
Mono	.....	.....	.....	.....	.....	.....	.....
Navajo	.....	40	40	40	.....	40	.....
Nortn. Belle	.....	.....	.....	10	.....	9⅝	.....
Ophir	35¼	35¾	35	35	.....	35½	36
Orig. K'ys'e	.....	.....	.....	.....	.....	.....	.....
Overman	9¾	9½	9½	9¾	.....	9⅛	9½
P. Sheridan	.....	¼	¼	¼	.....	¼	.....
Ray. & Ely	7⅞	8	8¼	8⅜	.....	8	.....
Richer	.....	.....	.....	.....	.....	.....	.....
Savage	9¼	9¼	9¼	10¼	.....	10⅛	10¾
Scorpion	.....	.....	.....	.....	.....	.....	.....
Seg.Belcher	.....	.....	.....	.....	.....	.....	17
Sierra Nev.	38	38½	39½	43¼	.....	42¾	42¾
Silver Hill	1¼	.....	2¼	.....	.....	.....	1.90
Silver King	.....	.....	.....	.....	.....	.....	.....
Summit	.....	.....	.....	.....	.....	.....	.....
Tioga	.....	3¼	3¼	3¼	.....	3¼	.....
Tip Top	.....	1¼	.....	1¼	.....	1¼	.....
Union Con.	53	55	55½	57¼	.....	58⅛	56-57
Utah	.....	.....	.....	.....	.....	.....	10½
Ward	.....	.....	.....	.....	.....	.....	.....
WashoeCon	.....	.....	.....	.....	.....	.....	.....
Wells Fargo	.....	.....	.....	.....	.....	.....	.....
Yel. Jacket	13⅞	13½	13½	14	.....	13½	10½
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....

REVIEW OF THE SAN FRANCISCO MARKET.

Most of the San Francisco quotations show a decided improvement. The Comstocks lead the market in the advance movement, some of the quotations opening to-day at nearly double the price of a week ago.

Alta is steady at $5 per share, and has scarcely varied from this price during the week. The principal operations in this mine consist in driving drifts on both the 1450 and 1550 levels, which are being run outside of and parallel with the ore vein. As soon as the north line of the mine is reached, cross-cutting will be commenced. The dump on this mine is full of ore.

Alpha opens at $11, the best price of the week.

We have no quotation of Argenta. The stock has been selling very freely on the San Francisco market at from $2.50 to $3 per share.

Belcher is fairly maintained. Cross-cut No. 3, on the on the 2360 level of this mine, is advancing, and the face is in fine quartz, giving low assays.

Best and Belcher shows a slight improvement. In the new shaft in this mine the flow of water is very strong.

Bullion has advanced $1 per share. The main incline in this mine is down 177 feet below the 2050 station; the bottom is in a mixture of clay and quartz.

Bodie closed yesterday at $7¾, a lower price than for some time past; this mine continues its regular bullion shipments.

Bechtel has been steady during the week at 70c. This company proposes to consolidate with the Sitting Bull Mining Company, under the name of the Bechtel Consolidated Mining Company, to consist of 100,000 shares, of which the Bechtel stockholders will receive 60,000 and the stockholders of the Sitting Bull 40,000 shares. This will be mutually beneficial. The Bechtel has a shaft 700 feet deep, and machinery which is capable of working to that depth. The Sitting Bull has a fine body of ore, supposed to be the extension of the Bulwer vein, all of which can be worked through the Bechtel shaft. This will save expense to both companies. Sitting Bull stock was recently selling in San Francisco at from 40 to 55c.

The titles to the principal mines in the Bodie district are in dispute; new claimants have arisen under the Act of Congress of March 3d, 1853, whereby the 16th and 36th sections in each township were granted to the State. Under the laws of California, the occupants of such sections are held to be preferred purchasers for six months after the filing of the plot of survey. The parties in possession at Bodie, having failed to avail themselves of the operation of the law, the new applicants have paid the regular price for mineral lands—$2.50 per acre—and have received certificates, and unless protests are entered, patents will be issued next November under the State title. The mines included in this tract are the Bodie, South Bodie, South Standard, Champion, South Bulwer, and a portion of the Bulwer.

A dispatch dated San Francisco, December 30th, 1878, says:

"A reporter of the *Call* interviewed United States Surveyor-General Wagner last evening on the subject. He expressed surprise at hearing the statement, and stated that by the law of 1853 mineral lands were excluded from going to the State, and the present occupants could prove up and patent their claims under federal law. He said, however, that the determination of the question would probably cost enough to ruin both the claimants and contestants.

"The Surveyor-General states that he will leave the matter to be settled by the courts. A number of prominent holders of Bodie mining property under United States title had a conference to-day. Some of them are represented to be in favor of compromising with the claimants under the State title, and it is intimated that reasonable terms may be arrived at. The South Standard Mining Company has already effected a compromise on terms which have been reserved from the public, and the owners of the Bodie Bank have taken similar action."

Belle Isle is selling in San Francisco in small amounts at 20c. per share. According to a recent official letter from the mine, the outlook is promising.

Caledonia is steady at $2.50 per share. The south cross-cut on the 1600 level of this mine is showing some good quartz and favorable ore indications.

Chollar Potosi shows quite an advance, opening to-day at $43, against $39 a week ago. The flow of water at the bottom of the combination shaft averages 85,000 gallons per day; the new pumping machinery, however, is about ready for work, when it is anticipated that but little difficulty will be experienced on this account. Crown Point shows but little change either in the appearance of the mine or the quotation of the stock.

Consolidated Imperial opens to-day at 75c. per hare, equal to $375,000 for the whole mine. This is the only quotation for the week, but a decline of 15c. from the price a week ago.

Exchequer has advanced somewhat, opening at $4¼, against $3⅞ a week ago.

Eureka Consolidated closed yesterday at $32, being an advance for the week of $1. The ore-bodies in this mine are yielding as largely and looking as well as ever. A recent letter from the mine indicates the usual amount of work being done in the various levels.

Gould and Curry shows an advance, in sympathy with its neighbors. The flow of water at the new shaft is still quite strong. The pumps will soon be running, when it is believed that the water will give no further trouble.

Grand Prize is barely maintained, closing last night at $7.75, against $8 last week. On the 20th ult., the miners working in the cross-cut at the 500-foot level in the mine put off a blast which penetrated the hanging wall and exposed the ledge. The opening made by the blast let loose a body of water confined between the walls of the lode, and the flow was so great that in a short time the drift was filled and the water rose about twenty feet in the shaft. Assays made from the pieces of ore detached went very high, the average being given at $400 per ton.

It is probable that this company will be compelled to put in better and more effective pumping machinery before it can hope to avail itself of what appears to be a good ore deposit.

Hale and Norcross has advanced $2 per share for the week. The water in this mine stands 50 feet below the 2000 level in the main incline. The main east drift on this level has about 190 feet more to run before connecting with the combination shaft.

We have no quotation of Hamburg: it has been sparingly dealt in on the San Francisco market at fluctuating values, ranging within a week between 80c. and $2.25 per share. This mine is down 600 feet. This company is making regular shipments of ore to the furnaces for reduction.

Independence closed yesterday at $1.10, a decline of 15c. from our last. A recent letter from the mine states that the new shaft is sunk and timbered 120 feet.

Julia shows the most marked advance of any stock on the list, opening to-day at $4¼, against $2¾ a week ago. The improvement in this stock is undoubtedly influenced by the near approach of the Sutro Tunnel and the prospects of the great benefits this will confer when connection is made. The south lateral drift of the tunnel toward the Julia shaft had attained, according to late mail advices, a distance of 1000 feet from the main tunnel, leaving 400 feet yet to go to make connection with the Julia shaft.

Justice is a little better. The ore stopes are looking well and continue to yield good ore, the daily output being about 40 tons.

Kentuck and Kossuth are unchanged.

Leviathan shows a slight advance, closing yesterday at 50c. per share, against 35c. last week.

Leopard is lower.

Manhattan showed a slight advance, according to recent sales in San Francisco. The output from this mine continues unabated.

Mexican and Ophir have materially advanced. The latter mine is extracting from the 2000-ft. level and shipping 75 tons of ore per day to the Brunswick mill for reduction. The ore is reported quite rich, and liberal returns are anticipated.

In the Mexican mine the most vigorous work is being prosecuted in all parts.

Recent transactions have been made in San Francisco in the shares of the Mono Mining Company's stock, at from $3 to $2 per share. The mine is looking well. The shaft, at recent advices, had attained a depth of 317 feet.

Navajo is steady at 40c. per share, at about which price it is selling very freely in San Francisco. This company continues its regular shipments.

Northern Belle is somewhat lower. This company continues its regular bullion production.

There is no particular change in Overman; the price of the stock is barely maintained, opening to-day at $9½, against $10 a week ago.

Raymond and Ely shows no change, and closed yesterday at a decline from the better prices of the week. The company's mill started up upon low-grade ore. We note the statement that there is a sharp contest for the control of this mine. Bad management on the part of the present Board of Directors is alleged by those who advocate a change, and proxies against them are being solicited for use at the annual meeting.

Savage has advanced; recent information from this mine conveys no special feature; rapid progress in the advancement of the various drifts and repairs to the main shaft, etc., is being made.

Silver Hill shows considerable advance. We see nothing in our exchanges or correspondence to indicate that there is any paying ore in this mine.

The new bonanzas show encouraging improvements in the enhanced quotations, as compared with a week ago. The prospects of the Mexican mine becoming an immediate bullion producer are not favorable. It is not known when there will be any stoping done, and the ore produced will be limited to the incline and stations until the workings are connected with the North Consolidated Virginia shaft, and by that time the 2300 and 2400 levels will be ready to be opened up. It is therefore doubtful if this mine will be classed with the bullion producers of the Comstock before next April or later. Recent advices state that ore of fair quality has been found in the drift north from the station on the 2200 level of the Sierra Nevada incline.

The work of enlarging and retimbering main north drift of the Union Consolidated from Ophir incline is making good progress. There is no change in flow of water from east drift.

Tip Top is steady at $1.25 per share, and has been quite active on the San Francisco Board. It is thought singular by those most interested that this company is unable to return from a monthly product of $50,000 one farthing to its stockholders.

The north drift in the Exchequer ground, on the 2400 level of this mine has been temporarily suspended on account of the strong indications of water, there being some danger of flooding the lower level of the mine.

The old bonanzas continue to improve, each showing advances of $1 per share for the week. The California Co. is making regular bullion shipments from a daily output of about 350 tons of ore, which is being reduced at the company's mill.

The north drift from the C. & C. shaft, on the 1950 level, is steadily advancing, the face in vein formation.

The Consolidated Virginia is being energetically worked in all parts; recent connections between drifts, cross-cuts and winzes in this mine have had the effect of greatly improving the ventilation in the lower levels.

The *Commercial Herald* of December 26th says of the market: "This is a broken week in the mining share market. A relaxation always follows at this period of the year, and a general inanimate state of affairs prevails. The Comstock developments are more than usually quiet, and as for 'deals' in said stocks, there is apparently very little evidence. Outside districts are coming to the front in a creditable manner, and the returns of bullion are even more than the best informed-anticipated. Although the incline in the Sierra Nevada is now half-way down to the 2300 level, with nearly the whole face in very rich ore, no response to the good news is seen in the reports of sales. While bad reports cause the stock to drop, good news brings no corresponding rise. This looks very much as if those holding control are not yet ready for a move."

The San Francisco *Post*, of December 21st, takes a very encouraging view of the mining outlook for the coming year. We make the following extracts from quite an extended review in the issue referred to:

"How long the dividends resumed by the California mine will be continued depends upon the ore reserves, but it is not likely that they will cease for several months to come. In February, Consolidated Virginia will probably resume dividends. By that time something should arise in Savage, Hale and Norcross, Bullion, Yellow Jacket, Crown Point, Alpha, Imperial, or in any other of the Washoe properties which now hold forth good prospects. The fact that the Comstock ledge shows a rich body of ore nearly down to the 2300 level in one mine is encouraging for all, and we think that future explorations at similar depths will produce good results. There promises to be unusual activity in outside districts and camps when the year has fairly opened. Eureka district, with its Eureka Consolidated, Richmond, Jackson, and other mines; Tuscarora, with its Grand Prize, etc.; the Bodie district, with its Standard, Bodie, and others which will come to the front as producers in the spring, and the many new districts which are being opened in Nevada, California, Arizona, etc., promise to swell the bullion production, increase the dividends, and combine to make the incoming year a period of great prosperity for the mining interests."

Assessments, with dates when delinquent: Tioga, 20c., January 24th; Succor, 50c., January 21st; Rye Patch Consolidated, $1, January 17th; Loyal Lead, 60c., January 20th; Defiance, 10c., January 23d; Hore Consolidated, ½ cent (the lowest assessment ever made.)

MINING MEETINGS.

The meetings of the following mining companies will be held in San Francisco at the dates affixed:

Hasson Cons. Mining Co	Jan.	3
Northern Light G. and S. Mining Co	"	6
Eagle G. and S. Mining Co	"	6
Griffith Cons. M. and M. Co	"	7
Bullion Mining Co	"	9
Cons. Virginia Mining Co	"	9
Peacock Mountain S. M. Co	"	9
Leviathan Mining Co	"	13

GENERAL MINING STOCKS.

Dividend Paying Mines.

NAME AND LOCATION OF COMPANY.		Feet on Vein.	Capital Stock.	SHARES. No.	Par Val	ASSESSMENTS. Total levied to date.	Date and amount per share of last.	DIVIDENDS. Total paid to date.	Last Dividend.	Rate p. An	HIGHEST AND LOWEST PRICES PER SHARE IN CURRENCY AT WHICH SALES WERE MADE. Dec. 28. H.	L.	Dec. 30. H.	L.	Dec. 31. H.	L.	Jan. 1. H.	L.	Jan. 2. H.	L.	Jan. 3. H.	L.	SALES.
Alps	Nev.	800	.....	30,000	....	204,000	Aug. 1878 $1 00	37,500	Apr. 1876	$0 05	....	....	....	....	....	....	....	....	....	....	....	....	
Belcher, G. S.	Nev.	1,040	10,400,000	104,000	100	1,392,200	Oct.. 1878 1 00	15,397,200	Apr. 1876	1 00	....	4	....	....	....	....	....	....	....	....	....	4	....	400
Bobtail, G.	Col.	2,500	1,136,630	227,326	5	*		56,831	Nov. 1877	25	....	....	....	....	....	....	....	....	....	....	....	....	
Bobtail Tunnel, G.	Col.	.....	100,000	20,000	5	52,000	July 1873 0 30	48,000	June 1878	50	....	....	....	....	....	....	....	....	....	....	....	....	
Bodie, G.	Cal.	.....	5,000,000	50,000	100	25,000	Feb. 1878 0 50	750,000	Dec. 1878	1 00	....	....	....	....	....	....	....	....	....	....	....	....	
California, G. S.	Nev.	600	54,000,000	540,000	100	.....	.....	29,700,000	Dec. 1878	1 00	....	10	....	....	....	....	....	....	10⅜	....	11	10⅜	180
Calumet & Hecla, C.	Mch	.....	2,000,000	80,000	25	1,200,000	.....	13,450,000	Aug. 1878	5 00	....	174	....	174⅛	....	174½	....	....	....	....	....	....	46
Central, C.	Mch	.....	500,000	20,000	25	100,000	June 1862 0 65	1,260,000	Feb. 1877	5 00	....	....	....	....	....	....	....	....	....	....	....	....	
Chollar Potosi, G. S.	Nev.	1,400	2,800,000	28,000	100	1,750,000	Sept. 1878 5 00	3,080,000	Feb. 1872	1 00	....	....	....	....	....	....	....	....	....	....	....	....	
Copper Falls, C.	Mch	.....	1,000,000	20,000	50	535,000	May. 1876	100,000	Nov. 1871	1 00	....	....	....	....	....	....	....	....	....	....	....	....	
Cons. Virginia, G. S.	Nev.	710	54,000,000	540,000	100	474,600	June 1873 3 00	40,500,000	June 1878	1 00	....	8¼	8¼	8	....	8¼	8	....	....	8⅜	8¼	8¼	8⅜	530
Confidence, G. S.	Nev.	130	2,496,000	24,960	100	256,320	Apr. 1878 0 50	78,000	May. 1865	8½	....	....	....	....	....	....	....	....	....	....	....	....	
Cons. Her. & Roe	Col.	16,500	1,000,000	100,000	10	*		.....	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....	
Crown Point, G. S.	Nev.	600	10,000,000	100,000	100	1,873,370	Sept. 1878 1 00	11,588,000	Jan.. 1875	2 00	....	....	....	....	....	....	....	....	....	....	....	....	
Daney	Nev.	2,000	.....	108,000	....	91,800	Nov. 1878 0 20	56,000	July 1863	.....	....	....	....	....	....	....	....	....	....	....	....	....	
Eureka Cons., G. S. L.	Nev.	.....	5,000,000	50,000	100	100,000	May. 1876 1 00	3,250,000	Nov 1878	3 00	....	....	....	....	....	....	....	....	....	....	....	....	
Eureka G. Mg., G.	Cal.	1,680	2,000,000	20,000	100	.....	.....	2,149,000	Apr. 1878	0 25	....	....	....	....	....	....	....	....	....	....	....	....	
Findley, G.	Geo.	.....	200,000	200,000	1	.....	.....	20,000	Dec. 1878	10	....	....	....	62c	....	....	....	....	60c	57c	60c	....	1,300
Franklin, C.	Mch	.....	500,000	20,000	25	360,000	June 1876 5 00	585,000	Nov. 1871	1 00	....	....	....	....	5	....	....	....	....	....	....	....	25
Gila	Ariz	.....	.....	100,000	....	50,000	Aug. 1878 0 25	50,000	Aug. 1875	0 25	....	....	....	....	....	....	....	....	....	....	....	....	
Gould &Curry, G. S.	Nev.	612	10,800,000	108,000	100	2,828,000	Nov. 1878 1 50	3,826,800	Oct. 1870	10 00	....	9¼	....	....	....	8¾	....	....	....	....	9⅜	....	275
Grand Prize	Nev.	1,500	.....	100,000	....	100,000	July. 1878 1 00	400,000	Feb. 1878	1 00	....	....	....	....	....	....	....	....	....	....	....	....	5
Hale & Norcross, G. S.	Nev.	400	11,200,000	112,000	100	2,970,000	Dec. 1878 0 50	1,598,000	Apr. 1871	5 00	....	....	....	....	....	....	....	....	....	....	....	....	
Hukill, G. S.	Col.	3,288	1,000,000	100,000	10	*	.....	.....	Dec. 1878	0 10	....	3.40	3.35	3.35	....	3.35	....	....	3.35	....	3.45	3.35	3,100
Independence	Nev.	1,500	.....	100,000	....	75,000	Feb. 1878 15	150,000	Nov. 1878	25	....	1.15	.....	1.10	1.05	.....	....	....	..	....	1.10	....	400
Kentuck, G. S.	Nev.	95	3,000,000	30,000	100	300,000	Aug. 1878 1 00	1,252,000	Mar. 1870	5 00	....	....	....	....	....	....	....	....	....	....	....	....	
K. K. Cons.	Nev.	.....	.....	50,000	....	250,000	Nov. 1878 1 00	50,000	Sept. 1873	0 25	....	....	....	....	....	....	....	....	....	....	....	....	
Leeds	Uth.	3,000	.....	60,000	.....	.....	.....	78,000	Oct.. 1878	0 15	....	....	....	....	....	....	....	....	....	....	1½	....	10
Leopard, L. G. S.	Nev.	1,500	5,000,000	50,000	100	175,000	Oct.. 1878 50	162,500	Dec. 1876	0 50	....	....	....	....	....	....	....	....	....	....	....	....	
Manhattan	Nev.	.....	.....	50,000	....	50,000	Oct.. 1878 1 00	400,000	Feb. 1877	1 00	....	....	....	....	....	....	....	....	....	....	....	....	
Merrimac, S.	Mas.	1,500	500,000	100,000	5	*	June	120,000	Mar.	.....	....	....	....	....	....	....	....	....	....	....	....	....	
Minesota, C.	Mch.	.....	1,000,000	20,000	50	436,000	..... 1869 1 00	1,820,000	Mar. 1876	0 50	....	....	....	....	....	....	....	....	....	....	....	....	
Modoc	Cal.	4,000	.....	100,000	....	400,000	Nov. 1878 0 50	50,000	Dec. 1876	0 50	....	....	....	....	....	....	....	....	....	....	....	....	
Moose	Col.	39,000	2,000,000	200,000	10	*	.....	550,000	Mar. 1878	0 25	....	4.55	4.35	.. ...	....	4½	4.35	....	....	....	4½	4.35	....	1,700
National, C.	Mch.	.....	500,000	20,000	25	195,000	Oct.. 1875 1 00	360,000	Oct. 1873	1 00	....	....	....	....	....	....	....	....	....	....	....	....	
N. Y. & Colorado, G.	Col.	.....	1,000,000	50,000	20	*	.....	20,000	Mar. 1877	0 20	....	....	....	....	....	....	....	....	....	....	....	....	
Northern Belle, S.	Nev.	1,600	5,000,000	50,000	100	.....	.....	1,425,000	Feb. 1878	1 00	....	....	....	....	....	....	....	....	....	....	....	....	
Ontario	Uth.	3,000	10,000,000	100,000	100	.....	.....	1,900,000	Dec. 1878	50	....	39½	....	....	....	39	....	....	....	....	....	....	35
Ophir, G. S.	Nev.	675	10,080,000	100,800	100	3,436,800	Nov. 1878 1 00	1,394,400	Mar. 1864	4 00	....	....	....	....	....	....	....	....	....	....	....	....	
Pewabic, C.	Mch.	.....	500,000	20,000	25	185,000	June 1868 3 00	460,000	July 1873	1 00	....	....	....	....	....	....	....	....	....	....	....	....	
Phœnix, C.	Mch.	.....	1,000,000	20,000	50	817,500	Sept. 1870 3 00	10,000	Dec. 1876	1 00	....	....	....	....	....	....	....	....	....	....	....	....	
Plumas	Cal.	.....	1,000,000	100,000	10	.....	.....	110,000	Jan. 1879	10	....	3.40	3.30	3.40	.....	335	....	....	....	3.40	....	....	....	2,050
Quincy, C.	Mch.	.....	200,000	20,000	10	.....	.....	2,230,000	Feb. 1878	5 00	....	....	....	....	....	....	....	....	....	....	....	....	
Raymond & Ely, G. S.	Nev.	5,000	3,000,000	30,000	100	630,000	Oct.. 1878 1 00	3,075,000	Sept. 1873	3 00	....	....	....	....	....	....	....	....	....	....	....	....	
Ridge, C.	Mch.	.....	500,000	20,000	25	200,000	.....	90,000	Feb. 1875	1 00	....	....	....	....	....	....	....	....	....	....	....	....	
Rye Patch	Nev.	1,600	.....	30,000	....	127,500	Aug. 1878 1 00	105,000	Dec. 1877	0 25	....	....	....	....	....	....	....	....	....	....	....	....	
St. Joseph, L.	Mo.	2,000 acs.	1,000,000	100,000	10	.....	.....	250,000	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....	
Savage, G. S.	Nev.	800	11,200,000	112,000	100	4,084,500	Dec. 1878 1 00	4,460,000	June 1869	3 00	....	....	....	....	....	....	....	....	....	....	....	....	
Seaton, G. S.	Col.	1,700	500,000	50,000	10	*		.....	May 1877	0 10	....	....	....	75c	70c	75c	....	....	....	....	....	....	300
Sierra Nevada, G. S.	Nev.	3,650	10,000,000	100,000	100	2,350,000	Oct.. 1878 3 00	102,000	Jan. 1871	1 00	....	44	....	....	....	....	....	....	....	....	....	....	150
Silver Islet	Mch	.....	.....	.....	....	.....	.....	.....	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....	
Silver King	Ariz	.....	.....	.....	....	.....	.....	450,000	Nov 1878	0 50	....	....	....	....	....	....	....	....	....	....	....	....	
Standard	Cal.	.....	.....	50,000	....	50,000	July 1878 1 00	700,000	Nov. 1878	1 00	....	....	....	....	....	....	....	....	....	....	....	....	
Yellow Jacket, G. S.	Nev.	1,200	12,000,000	120,000	100	3,798,000	Sept. 1878 1 00	2,184,000	Aug. 1871	2 50	....	14⅛	....	....	....	....	....	....	....	....	....	....	50
McClinton	Cal..	1,000	.....	60,000	....	.....	.....	.....	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....	

Non-Dividend Mines.

Allouez, C.	Mch.	.....	1,000,000	20,000	50	940,000	May 1876 5 00	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Alpha, G. S.	Nev.	300	3,000,000	30,000	100	240,000	Mar. 1878 1 00	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Alta	Nev.	600	.....	100,000	....	985,000	Dec. 1878 1 00	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Am. Flag, G.	Col.	5,300	600,000	60,000	10	*	.....	.....	.....	.....	....	20c	.....	21c	20c	19c	.....	.....	.....	20c	19c	.....	.....	3,700
Andes	Nev.	2,000	....	100,000	....	355,000	Oct. 1878 0 25	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Baltimore Cons.	Nev.	1,050	....	84,000	....	1,015,000	Apr. 1878 0 50	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Benton	Nev.	600	.....	108,000	....	91,800	Dec. 1878 0 50	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bechtel	Cal.	.....	.....	60,000	....	75,000	Nov. 1878 0 25	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bertha & Edith. G.	Vir.	645 acs.	500,000	500,000	10	*		.....	.....	.....	....	9c	.....	9c	.....	9c	.....	.....	.....	8c	....	10c	8c	13,900
Best & Belcher, G. S.	Nev.	545	10,080,000	100,800	100	438,590	Apr. 1878 1 00	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Boyle	Nev.	600	.....	108,000	....	16,240	Aug. 1878 0 15	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Buckeye	Col.	.....	2,000,000	400,000	5	*		.....	.....	.....	....	52c	.....	.....	.....	53c.	.....	.....	.....	.....	.....	51c	.....	1,800
Bullion, G. S.	Nev.	943⅛	10,000,000	100,000	100	3,052,000	Dec. 1878 1 00	.....	.....	.....	....	5	.....	.....	.....	4¾	.....	.....	.....	.....	.....	.....	.....	250
Caledonia, G. S.	Nev.	2,188	10,000,000	100,000	100	1,540,000	Nov. 1878 0 50	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cashier	Col.	.....	500,000	250,000	2	*		.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Challenge	Nev.	90	.....	50,000	....	10,000	Nov. 1878 0 20	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cleveland, G	Col.	3,715	250,000	25,000	10	*		.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cons. Imperial, G. S.	Nev.	468	50,000,000	500,000	100	775,000	Sept. 1878 0 20	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Con. N. Slope & E. C.T.	Col.	15,000	500,000	10,000	50	*		.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dahlonega	Ga.	.....	250,000	250,000	1	*		.....	.....	.....	....	15c	.....	16c	15c	15c	.....	.....	.....	15c	.....	.....	.....	6,700
Dana, C.	Mch.	.....	500,000	20,000	25	68,000	Jan.. 1863 0 50	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dawson, S.	Ont.	.....	1,200,000	60,000	20	.....	1878	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Day	Nev.	1,500	....	100,000	....	55,000	Sept. 1878 0 25	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dayton	Nev.	1,600	....	100,000	....	750,000	Apr. 1878 0 25	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
De Frees	Ariz	1,500	.....	100,000	....	115,000	Oct.. 1878 15	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Duncan, S.	Ont.	.....	1,200,000	60,000	20	75,000	July 1876 4½	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Exchequer, G. S.	Nev.	400	10,000,000	100,000	100	380,000	Jan.. 1878 1 00	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gold Placer, G.	Col.	.....	5,000,000	200,000	25	.....	.....	.....	.....	.....	....	22c	20c	21c	19c	20c	19c	.....	.....	19c	17c	18c	17c	32,500
Granville, G.	N. C.	357 acs.	1,000,000	100,000	10	*		.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Humboldt, C.	Mch.	.....	500,000	20,000	25	100,000	Sept 1878 0 15	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hussey	Nev.	4,500	.....	100,000	....	95,000	Oct.. 1878 0 25	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
International, S.	Ont.	.....	1,200,000	60,000	20	.....	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Julia, G. S.	Nev.	3,000	11,000,000	110,000	100	745,000	Nov. 1878 1 00	.....	.....	.....	....	325	3.10	.....	.....	5⅝	5¼	.....	.....	.....	.....	.....	.....	1,100
Justice, G. S.	Nev.	2,100	10,500,000	105,000	100	2,658,500	Aug. 1878 1 05	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
King's Mountain, G.	N. C.	.....	1,200,000	120,000	10	*		.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Kossuth	Nev.	2,700	.....	108,000	....	421,200	Aug. 1877 0 15	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lacrosse	Col.	3,900	1,000,000	100,000	10	*		.....	.....	.....	....	30c	.....	29c	.....	29c	28c	.....	.....	28c	.....	30c	27c	14,900
Leviathan	Nev.	2,000	.....	100,000	....	240,000	May. 1878 05	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Luzerne	Col.	4,200	5,000,000	500,000	10	*		.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Madison, C.	Mch.	.....	500,000	20,000	25	123,000	Sept 1876 0 10	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mariposa preferred	Cal.	44,387	5,000,000	50,000	100	1,425,000	June 1877 1 00	.....	.....	.....	....	2⅜	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	100
" common	Cal.	acres.	10,000,000	100,000	100	1,425,000	June 1878 1 00	.....	.....	.....	....	2⅛	.....	.....	.....	2.15	1¾	.....	.....	.....	.....	.....	.....	300
McCracken	Ariz	4,500	....	100,000	....	100,000	Oct . 1878 0 50	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Martin White	Nev.	.....	.....	100,000	....	500,000	July 1878 1 00	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mesnard, C.	Mch.	.....	500,000	20,000	25	160,000	Apr. 1876 0 50	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mexican, G. S.	Nev.	600	10,080,000	100,800	100	217,400	May. 1878 0 50	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Minnietta Belle	Cal.	1,500	.....	100,000	....	75,000	Apr. 1878 0 50	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mt. Bross Tunnel	Col.	8,600	2,000,000	200,000	10	*	1878	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Navajo	Nev.	1,500	....	100,000	....	125,000	May. 1878 0 25	.....	.....	.....	....	.....	.....	.....	.....	40c	.....	.....	.....	45c	.....	.....	.....	300
New York	Nev.	1,000	....	100,000	....	740,000	Nov. 1878 0 30	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Occidental	Nev.	1,700	.....	40,000	....	72,500	Feb. 1877 0 25	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Orig. Keystone	Nev.	1,500	1,000,000	100,000	10	50,000	Oct. 1878 0 50	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Overman, G. S.	Nev.	1,200	3,840,000	38,400	100	3,404,280	Sept. 1878 3 00	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Osceola, C.	Mch.	.....	1,000,000	40,000	25	2,567,880	Nov. 1877 3 00	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Petherick, C.	Mch.	.....	500,000	20,000	100	165,533	Mar. 1876 0 50	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pleasant View, G.	Col.	1,200	200,000	20,000	10	*		.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Quicksilver preferred	Cal	8,500	4,291,300	42,913	100	*		.....	.....	.....	....	32	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	100
" common	Cal.	acres.	5,708,700	57,087	100	.....	.....	.....	.....	.....	....	.....	.....	12	.....	11⅛	.....	.....	.....	.....	.....	.....	.....	200
Rockland, C.	Mch	.....	500,000	20,000	25	495,000	Jan.. 1874 1 00	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Seg. Belcher, G. S.	Nev.	160	640,000	6,400	100	244,800	Apr. 1876 5 00	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Silver Hill, G. S.	Nev.	5,400	10,800,000	108,000	100	1,296,000	Sept. 1878 0 50	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Silver Prize	Nev.	1,500	....	100,000	....	40,000	Nov. 1878 0 15	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Star, C.	Mch.	.....	500,000	20,000	25	265,000	Mar. 1876 0 50	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Superior, C.	Mch.	.....	500,000	20,000	25	340,000	Mar. 1878 0 25	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sutro Tunnel	Nev.	.....	20,000,000	2,000,000	10	.....	0 50	.....	.....	.....	....	3⅞	3½	3⅞	3¾	.....	.....	.....	.....	.....	.....	.....	.....	1,440
Tiptop	Ariz	.....	.....	100,000	....	120,000	July 1878	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.30	.....	100
Tioga	Cal.	1,500	....	100,000	....	.....	Oct. 1878 0 20	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Trio	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Trojan	Nev.	1,500	....	100,000	....	240,000	Oct. 1878 0 25	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tuscarora	Nev.	.....	.....	100,000	....	20,000	Nov. 1878 0 05	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Union Cons. G. S.	Nev.	.....	10,000,000	100,000	100	310,000	Apr.. 1874 0 25	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Utah	Nev.	1,000	....	20,000	....	680,000	Oct . 1878 1 00	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ward	Nev	1,200	....	110,000	....	66,000	Sept 1878 0 30	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wells Fargo	Nev.	1,500	....	108,000	....	216,000	Sept 1878 0 50	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

G. Gold. S. Silver. L. Lead. C. Copper. * Non-Assessable. †4 15 16.

Total Assessment levied to date..... ....$58,290,313 Total Dividends paid to date..... ... $151,34?,231 Total Sales for the week..... 99,460.

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MEETINGS.

PHILADELPHIA AND READING RAILROAD CO.
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PHILADELPHIA, December 16, 1878.

NOTICE IS HEREBY GIVEN TO THE Stockholders of this Company, that the Annual Meeting and Election for President, six Managers, Treasurer, and Secretary will take place at Musical Fund Hall, Locust Street, above Eighth, on the second Monday, 13th of January next, at 12 M.

DAVID J. BROWN,
Secretary.

DIVIDENDS.

OFFICE OF THE PLUMAS NATIONAL GOLD MINING CO., 54 Broad street, New York, January 2, 1879.—The Board of Directors have this day, out of the net earnings for the month of December, declared a dividend of 10 cents per share on the capital stock of the company, payable at the office of the undersigned, on and after the 17th inst.
Transfer books will be closed on the 10th and will reopen on the 21st. HENRY J. ROGEES, Secretary.

NEW YORK, December 18, 1878.
THE DIRECTORS OF THE EMPIRE GOLD MINING COMPANY have this day declared a dividend of ten cents in gold per share (par value $10) out of the net earnings for the month of November, payable at the office of the Treasurer, S. V. WHITE, No. 8 Wall street, on the 21st day of December, inst. The books to close on December 26th and re-open on January 2d, 1879.
GEO. H. HANDFORTH, Secretary.

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A. P. MARSHALL, Secretary and Assistant Treasurer, New York.
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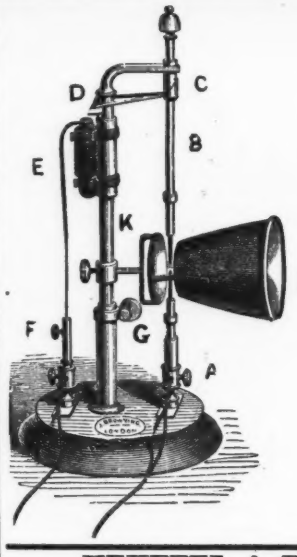

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